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Lumleian Lectures
ON
SOME FORMS OF VOMITING IN INFANCY.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON, MARCH-APRIL, 1925,

BY

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LECTURE I.—VOMITING DUE TO OBSTRUCTION FROM DEVELOPMENTAL DEFECT IN THE UPPER ALIMENTARY TRACT.

PERSISTENT vomiting as a symptom of infantile disorders is frequent enough. It is the rule in dyspeptic states of all sorts as well as in infective pyrexial disorders. Yet, just because of the predominance and frequency of this symptom in many of the most common ailments of infancy, it is especially necessary to bear in mind the possibility that the vomiting may be due to other and local causes, to developmental failure high in the intestinal tract, to inco-ordination of the intestinal musculature, or to purely functional disturbance of the gastric movements.

THE CHARACTER OF VOMITING DUE TO DYSPEPSIA.

I exclude altogether from consideration the vomiting which is symptomatic of most states of dyspepsia in infants, even although that vomiting may be long continued and severe. In infancy the dyspeptic state is almost always associated with some coincident disturbance of the bowels, and the intestinal disturbance is generally more constant than the gastric. In health the infant's bowels are opened with the least possible disturbance, and the faecal material flows quietly from the anus with little apparent effort. In dyspepsia the character of the stools and the manner of defaecation are both altered. When fermentative changes are in excess the stools are acid and irritating, are hurried along the intestinal canal by powerful peristaltic waves and expelled from the anus with great violence, with the audible escape of gas and with the the outpouring of much watery secretion from the bowel. Defaecation is then generally a painful process, as is shown by the facial expression of the infant, by the cry and the movements of arms and legs. The irritating quality of the stools may be gauged by the erythema and excoriations produced upon the skin of buttocks, thighs, and heels wherever the restless movements of the child bring it into contact with the dejecta. When, on the other hand, the putrefactive processes are in excess and the acidity of the intestinal contents is unduly diminished the reaction of the stools is alkaline, the fatty acids combine with calcium and magnesium to form soaps, and the stools become hard and scybalous. For the infant the ejection of such stools is a matter of difficulty. With great straining and much distension of the anus the stool, sometimes streaked with mucus or with blood, is painfully ejected. In a second group of infantile gastro-intestinal disorders the disturbance is due, not, as in dyspepsia, to changes in the reaction and character of the intestinal contents, but is the accompaniment of an infection, catarrhal or even ulcerative, of the mucous membrane of the intestinal wall. In catarrhal and ulcerative enteritis and colitis in infancy the disorder is also constantly manifested by changes in the stools, and especially by the presence of mucus, blood, and pus in considerable quantities, while defaecation is painful and often accompanied by tenesmus.

Both in dyspeptic and in infective diarrhoea vomiting of stomach contents may be severe and persistent, but the vomiting is then associated with characteristic changes in the stools and in the manner of defaecation. In the conditions of habitual and persistent vomiting which I shall consider it is to be noticed, in the first place, that the stools and the manner of defaecation will show none of the characteristics of dyspeptic or of infective diarrhoea. In all of them vomiting alone is prominent, associated perhaps with a varying degree of constipation or with the passage of such stools as are characteristic of the state of inanition.

CLASSIFICATION OF THE CASES TO BE CONSIDERED.

Vomiting, then, so far as it forms a part of the picture of dyspepsia, so far as it is to be regarded as a reaction in the interests of the child designed to assist in the removal of irritating and harmful products of digestion, is excluded from consideration. In these lectures I propose to deal only with the cases of persistent vomiting which are dependent upon some disorder in the mechanism of the movements of the stomach and bowel. In some the disturbance is due to the presence of gross defects in the structure of the alimentary tube; in others neuromuscular inco-ordination imposes an obstruction to the passage of the intestinal contents little less yielding; in yet others the explanation is to be found in a variety of purely functional disturbances.

VOMITING DUE TO OBSTRUCTION FROM DEVELOPMENTAL DEFECT IN THE UPPER ALIMENTARY TRACT (*Lecture I*).

(A) *Duodenal Obstruction:*
  (1) Intrinsic—Duodenal atresia and stenosis.
  (2) Extrinsic—Abnormalities of intestinal rotation and peritoneal fixation, giving rise to volvulus and kinking of the bowel.
(B) *Pyloric Obstruction:* Pyloric stenosis of Landerer and Maier
(C) *Oesophageal Obstruction.*

VOMITING DUE TO OBSTRUCTION FROM NEUROMUSCULAR INCO-ORDINATION (*Lecture II*).

(A) *Pyloric Obstruction:* Hypertrophic pyloric stenosis, achalasia of the pyloric sphincter.
(B) *Obstruction at the Ileo-caecal Valve:* Generalized intestinal spasm, achalasia of the ileo-caecal sphincter.
(C) *Obstruction at the Anus and in the Rectum:* Hirschsprung's disease, achalasia of the ano-rectal sphincter.
(D) *Obstruction at the Cardia:* Cardiospasm, achalasia of the cardiac sphincter.

SOME FORMS OF HABITUAL VOMITING IN INFANCY (*Lecture III*).

(A) *Vomiting and Acrophagy.*
(B) *Vomiting and Nervousness.*
(C) *Vomiting and Idiosyncrasy against Cow's Milk.*
(D) *Vomiting and Rumination.*

FREQUENCY OF THE CONDITIONS TO BE CONSIDERED.

Although such a condition as congenital occlusion of the bowel could hardly escape recognition so soon as *post-mortem* examinations came habitually to be practised upon a considerable scale—Osiander in 1797 was probably the first accurately to describe a case—it is only during the last twenty or thirty years that knowledge has slowly accumulated with regard to the majority of the disorders I shall have to consider. The successful application of the method of examination by Roentgen rays and an opaque meal in the case of young children is of comparatively recent date. The constant development of surgical technique to-day enables us successfully to submit the infant and even the newly born to operative procedures which in the past have invariably proved fatal, while in the case of the primarily functional disorders a clearer appreciation of the nature of the disturbance has enabled serviceable treatment to be devised. But, it may be urged, experience has seemed to show that many, if not all, of these conditions are of considerable rarity. Diligent search in the literature may find recorded perhaps one hundred or more examples of duodenal atresia or a similar number of oesophageal atresia—Spriggs in 1912 in his admirable paper quoted 328 examples of intestinal occlusion, of which 92 were in the duodenum. Of this total he himself provided 24 examples previously undescribed. The next year Edington added 7 very completely studied cases occurring within a short time of each other in his own practice. Jewesbury and Page in 1923 reported 4 cases of different varieties of duodenal obstruction in young infants met with in one year in St. Thomas's Hospital. In 1924 Smellie reported 3 cases of intrinsic duodenal obstruction studied by him in hospital practice during the same year. But the impressions derived from a study of the recorded cases are of little value in indicating the actual frequency of such conditions. Before 1900 the number of cases of hypertrophic pyloric stenosis

was insignificant; they were recognized by only a few physicians who had paid attention to the subject. To-day, although very many still escape detection, the great frequency of the disease is apparent, because a knowledge of its existence and symptomatology has become widely spread, and the lives of hundreds of infants may be said to be saved annually by timely operation. Of the frequency of all disorders in the first days of life we are relatively ignorant, partly because of their real obscurity, but partly because of a pessimistic attitude too widely spread towards the diseases of the newborn which tends to leave recovery to the test of time. Only if the child is born in an institution or hurried in the first days of life to a hospital is the diagnosis likely to be made. Braun calculates that in Germany imperforate anus, which is not likely to escape recognition, occurs about once in 17,000 births. Occlusion at a higher level is estimated by Theremin to occur once in from 16,000 to 55,000 infants. The value of these figures and estimates is very slight. It is at least possible that the frequency may be much greater. Complete atresia is more common in the records of *post-mortem* inspections than partial stenosis, but the partial obstruction is clearly the more elusive and the less likely to be differentiated from a state of marasmus or dyspepsia. Similarly, it is frequently found that spastic states of the bowel, of which the hypertrophic stenosis of the pylorus is the most common, are more apt to pass undetected if the obstruction is only intermittent and of slight degree. Such children waste, their immunity to infection falls and their tolerance for food diminishes, until death ultimately occurs from pulmonary disease or from a secondary state of true dyspepsia. With the exception of hypertrophic stenosis of the pylorus and of some of the minor functional disturbances, one can only conclude that the conditions which I shall describe are not common, but that they are less rare than is generally supposed, and that they are beginning to be identified in increasing numbers as attention is directed towards them.

I.—ORGANIC OBSTRUCTION OF THE UPPER ALIMENTARY TRACT.

A. DUODENAL OBSTRUCTION.

It is to duodenal obstruction that I shall devote most attention, not only because obstruction in that situation, taking all cases into consideration, is relatively common, but because the diagnosis, supported by a characteristic radiographic appearance, is often not difficult, and because, sometimes at least, we may hope to save life by means of a timely operation following upon early diagnosis. In the past the interest in these conditions has been mainly in their developmental and pathological bearings. In the future it will pass more and more to the bedside.

The cases to be considered fall into two groups, differing widely in etiology and to a considerable extent in symptomatology, in their treatment, and in their prognosis. They must therefore receive separate consideration.

Etiology.

1. *Intrinsic Duodenal Obstruction: Duodenal Atresia and Stenosis.*—In the alimentary tract, from the oesophagus to the anus, we meet with cases both of atresia and of stenosis which have been the subject of exhaustive pathological studies. Cordes, Spriggs, Kreuter, Kuliga, and Cautley have contributed valuable studies of the literature. In all situations we meet with three varieties of obstruction: (1) by a diaphragm or membrane, perforate or imperforate; (2) by the interposition in the length of the bowel of a fibrous cord-like structure which may or may not contain a narrow lumen; (3) by complete separation of the gut which terminates blindly and begins again after a gap which is completely unbridged.

The embryological studies of Tandler, Kreuter, Forssner, Odermatt, and others have done much to make clear the origin of atresia and stenosis of the alimentary tract. These studies take us back to the fifth week of embryonic life—to a time when the bowel is a simple tube stretching from the mouth to the allantois, and showing but little differentiation into its separate parts except for a slight widening of the stomach and some convolution in that part which is to become the small intestine. The coats of the bowel wall are in no way differentiated, and the central lumen is lined by a layer of primitive rounded endodermal cells. At this stage there sets in a rapid proliferation of the primitive epithelium, which results in the complete obliteration of the temporary lumen. Only some weeks later does a permanent lumen form by the fusion of certain vacuoles or cleft-like spaces which appear in the solid cord of endodermal cells. The epithelium lining this permanent lumen becomes differentiated into that characteristic of the various parts of the intestine, and the submucous and muscular coats of the bowel become distinct. The growth of the mesenchyme and the differentiation into muscular and fibrous coats may begin at a time when the occlusion by primitive epithelium is still present. This process of obliteration of the lumen of the bowel has been shown to occur normally in the oesophagus of the embryos of many animals (Marshall, Balfour), in the oesophagus of the human embryo (Kreuter), and in the duodenum of the human embryo (Tandler). Forssner has attempted to show that exceptionally it may occur in all situations in the bowel. He has argued very convincingly that the ingrowth of the mesenchyme and the persistence of epithelial occlusion will account for the three types of obstruction, representatives of each of which are found from time to time in most, if not in all, of the segments of the intestinal canal which are developed from this primitive tube. If the persistence of the foetal obliteration of the lumen of the primitive gut involves but a minimal length of bowel the diaphragmatic variety is produced, and the mesenchyme may or may not penetrate within its folds. In specimens examined microscopically it is found that the diaphragm in some cases consists mainly of a double layer of epithelium placed, as it were, back to back, while in others the epithelial layers are separated by fibrous tissue and muscle. If, on the other hand, the obliteration extends for some distance along the length of the bowel, the mesenchyme grows closely around the mass of embryonic epithelium, which atrophies and disappears, as such tissue tends to do, notably in the case of the vitelline duct, leaving no trace of its presence. If, as the result of changes in further development, the slender cord of fibrous tissue, enclosing perhaps the remnants of muscle and glandular tissue, is sundered, the two parts of the bowel at birth would be completely separated.

In the duodenum, as in the oesophagus and rectum, we are spared the necessity of discussing an extensive literature concerned to prove that atresia and stenosis by a diaphragm or by the interposition of a fibrous cord may be the result of foetal accidents such as volvulus and intussusception, or of foetal diseases such as peritonitis. If we were dealing with occlusions of the intestine at a lower level, where the bowel has a greater mobility, such factors would have to be considered, although even there it is difficult to understand how a volvulus or an intussusception could disappear, leaving no trace of its presence save a diaphragmatic or cord-like occlusion of the bowel, or to believe that the inflammatory changes involved in peritonitis could take place at so early a stage of foetal life. The belief that duodenal atresia and stenosis are due to a primary fault of development is supported by the frequency with which other developmental anomalies are found in association with the duodenal obstruction (11 out of 57 cases, Cordes).

Bland-Sutton has emphasized that the parts of the bowel which are most prone to exhibit developmental defects are those in which the developmental process is particularly complicated, the seat, as he says, of an "embryological event," as, for instance, in the neighbourhood of the vitelline duct or around the bile papilla. In many cases of duodenal atresia it is clear that the obstruction is closely connected with the outgrowth of liver and pancreas from the primitive gut. Not only are many obstructions found in the near neighbourhood of the papilla, but abnormalities of the common bile duct are frequent accompaniments. Thus, Buchanan describes a case in which the bile duct opened upon the upper surface of a perforate diaphragm, the pancreatic duct entering below. Edington figures his histological examination of a similar case in which the diaphragm was traversed by a channel which was lined by columnar epithelium, continuous with the ducts in the pancreatic tissue above and with the

lumen of the bowel below. Smellie describes a case of complete isolation of the stomach and first part of the duodenum which ended blindly. The gall bladder was in the correct position. The cystic and the hepatic ducts, joining to form the common duct, gradually merged into the second part of the duodenum, so that it was not possible to say where the common duct ended and where the duodenum began; presumably it was just below the entrance of the pancreatic duct. Many other cases of a like nature could be quoted. Often abnormality of the bile duct leads to a double outflow, bile entering both below and above the obstruction. In many cases of duodenal obstruction in which the main orifice of the bile duct is found to be above a complete obstruction the intestines have contained bile. Similarly, bile has been vomited when the papilla is situated below a complete obstruction. That bile so vomited may be due to swallowed amniotic fluid containing bile, or that the bile found in the intestine below an obstruction reached that situation at a time antecedent to the development of the obstruction, are possible, if somewhat unlikely, explanations. According to Savariaud, bile does not normally reach the duodenum until the fifth month. The presence of a minute accessory duct is probably often overlooked, and is the explanation of the presence of bile on what would appear to be the wrong side of a complete obstruction. Spriggs, Cordes, and Cockayne have dealt fully with this point of the distribution of bile in congenital duodenal obstruction. In other cases it may be that the condition is in reality one, not of complete atresia, but of stenosis, and that there exists a minute channel which has escaped detection. The difficulty of detecting minute fistular communications after death is considerable. There is a specimen in the St. Bartholomew's Hospital Museum from an infant, aged 9 months, showing a diaphragmatic septum in the duodenum. There is no evidence of an orifice in this diaphragm, though the history of the case and the duration of life seem to prove that some opening must have existed. We may conclude, with Cordes, that since the region of the bile papilla from an early period in the life of the embryo undergoes radical formative changes as the result of which the liver and pancreas develop, epithelial obliteration in the manner described, which may occur in any situation, is peculiarly prone to affect the near neighbourhood of the ampulla of Vater, and to be accompanied by abnormality in the distribution of bile ducts and pancreatic ducts.

2. *Extrinsic Obstruction: Abnormalities of Intestinal Rotation, etc.*—In the duodenum at the duodeno-jejunal flexure we meet with a second group of cases of obstruction, due also to developmental anomalies but of a very different nature. In the state of development characteristic of the human embryo of the fifth week, the three parts of the intestinal canal are clearly marked by their separate blood supply—the fore-gut digestive in function, the mid-gut absorptive, the hind-gut excretory. The blood supply of the mid-gut is the superior mesenteric artery, which crosses directly to the umbilicus and vitelline duct. A considerable part of the mid-gut lies outside the abdomen, traversing the ring which is to be the site of the future umbilicus. The pre-arterial segment of the mid-gut elongates at a very much greater rate than the post-arterial, which contains the caecum. By the tenth week the coils of intestine come more and more to occupy the abdominal cavity and to leave the umbilical sac. The pre-arterial coils enter first and pass over to the left side of the abdomen behind the transverse colon and behind the mesenteric vessels, so that they come to lie, not on the right, but on the left side of the mesentery. The superior mesenteric artery crosses the pre-arterial gut at a point near the termination of the duodenum, and the primitive relation of this vessel, lying as it does between the duodenum and the colon, is never lost. When later the caecum and ascending colon leave the sac they occupy a situation on the right side of the mesentery, while the descending colon maintains its primitive position on the left.

Derangements of this intestinal rotation—non-rotation with a left-sided caecum and appendix, reversed rotation with the duodenal loop crossing in front of the artery, and with the colon most posterior of all, malrotation with reversed rotation of the pre-arterial segment, and arrested rotation of the post-arterial segment—are met with from time to time. The abnormal disposition of the intestine implies abnormal attachments and fixation of the peritoneal folds, and this may or may not give rise to untoward results. Undue fixation may cause kinking of the bowel, especially at the duodeno-jejunal flexure, or there may be direct pressure upon the duodenum by the superior mesenteric artery or by abnormal peritoneal folds. On the other hand, undue want of fixation predisposes to volvulus. Dott, in a very valuable paper, has pointed out how widely this characteristic volvulus neonatorum differs from the usual variety of acquired volvulus. Acquired volvulus is confined to a limited portion of gut, sharply defined above and below. The bowel involved suffers from compression or occlusion of its blood vessels, and can be easily recognized as a greatly congested and widely distended portion of the intestine. In volvulus neonatorum the extent of bowel involved is so great as to render its recognition difficult. There is obstruction only at one end of the twisted bowel—the duodenal end. The lower extremity in ileum or colon suffers no occlusion. The degree of vascular congestion is slight. Collapse rather than distension is likely to occur, and only the upper duodenum and the stomach become greatly distended. In general the symptoms are those occasioned by duodenal obstruction.

Symptomatology.

1. *Intrinsic Duodenal Obstruction: Duodenal Atresia and Stenosis—Sex.*—In contrast to the rule in hypertrophic pyloric stenosis, where more than four-fifths of the whole occur in males, boys and girls seem equally affected.

Prematurity and other Malformations.—In congenital duodenal stenosis or atresia the infant is not infrequently premature, sometimes the subject of other congenital malformations, yet most often strong, healthy, and well formed in other respects at the moment of birth.

Age.—The age of the infant at which serious symptoms first attract attention depends upon the completeness of the obstruction. In the great majority the occlusion is complete, or all but complete, and unless relieved by operation life is not prolonged beyond two or three weeks. Many have died about the ninth day. In only a very few is a painful existence maintained for a few months. Smellie's case lived nearly three months; Buchanan's eighteen months; Cautley's eighteen months; von Koos's thirteen months before operation and two months after. Silcock, Perry and Shaw, and Moore have recorded the accidental finding of duodenal stenosis, thought to be congenital, in the *post-mortem* examinations of adults. In general, in spite of these occasional exceptions, it may be said that if operative interference is to save life the diagnosis must be established within a few days of birth.

The Vomiting.—The persistent vomiting of bile-stained fluid in a newly born child should always arouse the suspicion of duodenal obstruction. The vomiting begins upon the first, second, or third day of life, so soon as food is taken in considerable quantities. It occurs with great regularity soon after a meal. Although vomiting is profuse, it lacks the explosive character of the act in hypertrophic pyloric stenosis. In more than 80 per cent. of the recorded cases the vomit is brightly stained with bile. In the remainder, when the obstruction is above the papilla, there may be no bile in the vomit. In the later stages haematemesis is common. Bilious vomiting is rare in hypertrophic pyloric stenosis; I have met with it only once.

The Stools.—Some degree of constipation is the rule, but the complete absence of meconium and the passage of only a little glairy mucus, as is the rule in intestinal occlusion at a lower level, do not occur. Generally it is noted that on one or more occasions a little meconium, not very abnormal in appearance, has been voided, but that as the days pass there is no sign whatever of the usual change to yellow milk stools. In hypertrophic pyloric stenosis the change to milk stools always takes place in the usual way, although at the height of the disturbance the stools may again assume a character which reminds one of meconium—that is, they become the slimy, deeply pigmented stools of complete inanition. Microscopic examination, in cases of complete obstruction, may show the absence of lanugo.

The Examination of the Rectum.—In duodenal stenosis or atresia the examining finger encounters nothing very abnormal in the rectum. In occlusion of the lower alimentary tract the rectum and pelvic colon are often quite undistended, so that the finger cannot be passed more than 2 or 3 inches from the anus. It is to be remembered that rectal atresia is always situated within 2 inches of the anus, so that confusion should not arise. In several instances the inability to pass the finger into the rectum has led to the erroneous diagnosis of a rectal rather than an intestinal atresia. For the same reason in an ileal or colic obstruction it is usually possible to inject only minimal amounts of fluid into the bowel. In duodenal obstruction, on the other hand, the same difficulty is less likely to be encountered.

The Abdomen.—In duodenal obstruction the abdomen seldom shows any general distension. Only the epigastrium may be full and the outline of the stomach, with faint indications of peristaltic activity, may be apparent. Immense peristaltic waves, such as gradually develop in the later stages of hypertrophic pyloric stenosis, are not seen. On the other hand, it is important to notice that the visible peristalsis may be appreciable in the first days of life, while in hypertrophic pyloric stenosis it develops slowly after an interval, usually of some weeks. In intestinal occlusion at a lower level the abdomen may be greatly or irregularly distended, and visible intestinal peristalsis rather than gastric peristalsis is the rule. Auscultation over the distended abdomen will often disclose a great variety of loud gurgling sounds and borborygmi, while in duodenal obstruction there is unusual silence.

FIG. 1.—Congenital duodenal stenosis, showing dilatation of upper duodenum.

The General Condition.—After the first few days of life emaciation and dehydration proceed rapidly. Soon the temperature becomes subnormal, the extremities cold and cyanosed, and the pulse rapid. The facial expression is anxious and the child looks very ill, contrasting with the eager, alert, if pained, expression of the baby with hypertrophic pyloric stenosis. Anuria is common. Many are jaundiced more deeply than is the rule with the newly born.

The X-ray Picture.—In nearly all cases an *x*-ray examination after a bismuth meal will show a quite characteristic picture, which can hardly fail to make the diagnosis clear. The duodenum is seen as a widely distended pouch, ending abruptly at the site of the obstruction. By an *x*-ray examination, and by careful clinical examination, it ought to be possible to avoid confusion with intestinal occlusion at a lower level, in which constipation and the abdominal distension rather than the vomiting are the prominent features. For this reason I have excluded consideration of ileal and colic atresia.

The following case, which came under my care in the children's department at Guy's Hospital, is an example of congenital duodenal stenosis, with complete or almost complete obstruction.

The baby, a girl, weighed at birth 3½ lb. She was a first child, born after one miscarriage. On the first and second days nothing occurred to arouse anxiety. On the third day vomiting began, and continued with increasing severity after every breast feed. The vomit was deeply bile-stained. The baby was seen by me on the fifth day. I was told that up to that time the bowels had opened twice and a little meconium, not noticeably abnormal, had escaped. Rectal examination showed nothing abnormal. There was no visible peristalsis of the small intestine, and although close inspection seemed to show the outline of the distended stomach no definite peristaltic waves were seen. An examination after a bismuth meal showed a dilated stomach with nothing leaving the pylorus. Thirty minutes later a second examination showed the outline of the greatly distended duodenum (Fig. 1), which ended abruptly at a point apparently in its second part. Two small opaque spots below suggested that a small amount of the meal had passed an obstruction which was barely perforate. On this day, the fifth of life, the infant's weight was 16 oz. less than at birth, although very little meconium had been passed. That afternoon Mr. Steward performed a posterior gastro-enterostomy. There were a few ounces of straw-coloured fluid in the peritoneal cavity, but no other evidence of peritonitis. The site of obstruction was marked outside the gut by a paler area, perhaps half an inch long, above which the bowel was greatly dilated and engorged, while below it was collapsed and empty.

For the first six days after operation bilious vomiting continued, although in decreasing amount. The bowels were open on the day after the operation. Three weeks after the operation *x*-ray examination showed the opaque meal issuing from the stoma, while the distended outline of the duodenum was still apparent. On the twenty-fifth day after the operation the child was sent home, weighing 8 lb. 5 oz. When 3 months old, during hot weather, the infant suffered severely from an attack of diarrhoea and vomiting, and, as might be expected from the conditions produced by the operation, the vomited matter was bile-stained. Fig. 2 is a photograph of this baby, now apparently healthy, at the age of 8 months.

FIG. 2.—Photograph of the infant with congenital duodenal stenosis taken when aged 8 months.

Péhu and Auberge, who have recently exhaustively reviewed the literature of duodenal obstruction in childhood, divide the cases into two groups: cases of stenosis and atresia, here called "intrinsic," which they term "cases incompatible with existence"; and cases, here named "extrinsic," which they call "cases compatible with existence." I have recounted this success in detail because I feel that the view implied in this nomenclature is altogether too gloomy. *Post-mortem* records show a very large number of cases which almost certainly might have been saved in the same way had the diagnosis been established in the first days of life by means of the characteristic *x*-ray picture. In the literature, however, only one other case is reported as having been saved by timely operation. In 1916 Ernst of Copenhagen successfully performed duodeno-enterostomy, which would appear to be the operation of choice in a case of duodenal atresia.

2. *Extrinsic Duodenal Obstruction: Abnormalities of Intestinal Rotation, etc.—Age.*—The symptoms in extrinsic cases are often less complete and less characteristic. The history in general is one of recurrent attacks or bouts of severe vomiting of bilious material, together with abdominal pain, dating back in many cases to earliest infancy, but often beginning in later life. It is clear that the anomaly of intestinal rotation and of peritoneal fixation can be present without producing any obstruction, but that it does powerfully predispose to a variety of accidents, such as volvulus, ptosis, and kinking of the duodeno-jejunal flexure, or duodenal obstruction by peritoneal bands and by the superior mesenteric artery as it passes into the root of the mesentery.

Of twenty-eight cases of duodenal obstruction of this variety recorded in the literature as being relieved by operation, and reviewed by Duval and Gatellier, in six the subjects were children. Dubose's case was 8 weeks old, Frank's 11 months, Downes's 4½ years, Ombrédanne's 11½ years, Kotzareff's 12 years, and Foisy's 14 years. Rixford has recorded successful reduction of volvulus at 5 years of age. Poynton has recently published four cases in children occurring within a short time of each other in his own practice, all of which, however, proved fatal. Since all the characteristic features of a localized intestinal volvulus are absent, he rightly emphasizes the likelihood of confusion with that more common cause of bouts of uncontrollable vomiting in childhood, the so-called cyclical vomiting.

In very many cases, however, it would appear that the first attack of duodenal obstruction is fatal. Of Dott's series of thirteen cases in which duodenal obstruction had occurred, collected from the literature, symptoms developed within a few days of birth in six. In his own two cases the infants died on the twelfth and sixth days of life, immediately after an unsuccessful attempt to reduce the

obstruction by operation. Of the four cases published in 1923 by Jewesbury and Page, occurring in young infants admitted to St. Thomas's Hospital within a short time of each other, one was an example of atresia and one of extrinsic duodenal obstruction by arterial pressure. Both of these died. Two others, in which the extrinsic obstruction was by kinking of the duodeno-jejunal flexure by peritoneal bands, were saved by operation. I agree with Dott that in all probability extrinsic obstruction is more common in the newborn than is generally supposed. Such cases are sure to be confounded with dyspepsia and treated by dietetic prescriptions. The danger to life must vary with the precise nature of the accident to which the obstruction is due. It is likely to be much greater in volvulus than in obstruction by peritoneal folds or bands.

Vomiting.—The vomit is always bile-stained. In the later stages haematemesis may occur. The act follows closely upon the intake of food.

The Stools.—Meconium is voided normally after birth, and if the onset of the obstruction is delayed for some days the change to milk stools may take place normally. Later, constipation will be severe and the stools become those characteristic of a state of inanition.

The Abdomen.—Distension will only affect the epigastrium, where the outline of the stomach and perhaps gastric peristalsis may be dimly apparent.

The X-ray Picture.—The diagnosis is only likely to be made with certainty by means of an *x*-ray examination. It must be directed to the elucidation of two points. Normally the duodenum empties with great rapidity. For a few seconds, perhaps five or six, the issuing shadow will be seen to pause in the first part of the duodenum immediately beyond the pylorus. The remaining parts of the duodenum are traversed in the space of six or eight seconds more. In extrinsic duodenal obstruction in older subjects the duodenum is seen to be greatly dilated, and to empty with difficulty and very slowly. Peristaltic waves are observable, and sometimes reverse peristalsis with return of the food through a "forced" pylorus. In infants something of the same may be seen, if perhaps in less developed form. Secondly, in cases of doubt attention should be paid to the position of the caecum and ascending colon. If there is a left-sided caecum, or if it is otherwise abnormal in situation or unduly movable, the probability that we are dealing with a case of obstruction from abnormality of peritoneal fixation is greatly strengthened. For this examination a bismuth enema is valuable. Such an examination in an older child may be necessary to distinguish the condition from one of cyclical vomiting.

Dott has discussed the operative procedure indicated if laparotomy reveals a neo-natal volvulus. The pressure can be relieved by the reduction of the volvulus, as was successfully done in Rixford's case. Dott favours the delivery of the intestines and their rapid untwisting, deciding in each case whether to return them in the position of malrotation or to complete the rotation to the normal position by hand. He advises fixation of the caecum as an additional security against recurrence. If on account of adhesions reduction is impossible, a gastro-enterostomy should be performed. In obstruction by peritoneal bands it may only be necessary to free the duodenum from their pressure.

B. Obstruction of the Pylorus.

True organic stenosis at the pyloric valve from congenital defect is occasionally found in adults. Landerer in 1879 and Maier in 1885 were the first to record a series of cases of this defect which had in common an absence of the ring-like thickening due to the musculature of the pyloric sphincter, while the mucous membrane passed inwards at the point to form a valve-like diaphragm pierced by a quite small opening. In Landerer's cases the pyloric canal and stomach showed dilatation, but little or no hypertrophy. Maier described at least one similar case without hypertrophy, but added a large number in which, in addition to the valvular obstruction, there was present a considerable hypertrophy of the muscle of the whole pyloric canal and pyloric part of the stomach. It seems likely that cases in adults of pyloric stenosis and hypertrophy described by Maylard, Barling, and others in this country and thought to resemble the common hypertrophic pyloric stenosis of infancy, were in reality of the type described by Landerer and Maier in Germany and recognized by Russell in this country. It is interesting to recall that Hirschsprung, in calling the attention of the profession to the common hypertrophic stenosis of infants, made the opposite mistake, and was at first under the impression that he was recording cases in infancy of the organic stenosis of the type described by Landerer and Maier. In hypertrophic pyloric stenosis there is present, of course, no true organic stenosis at all. Within the rigid spastic musculature of the pyloric canal there lies a lumen in every way normal, but so folded that on transverse section the outline appears shaped like a star or rosette. Since Hirschsprung's first communication innumerable cases of hypertrophic pyloric stenosis have been encountered and recorded, and the great frequency of the condition is now fully appreciated. On the other hand, even among adults the records of cases of organic stenosis remain very few. In infancy, I know of but one undoubted case, that described by Schäfer. It is characteristic of this form of pyloric obstruction that the symptoms begin at some time during later childhood, but not during infancy.

Schäfer's *post-mortem* examination showed closure of the pylorus by a membranous diaphragm composed of mucous membrane with a central lumen which permitted the passage of only a very narrow sound. During life a litre of malted milk had passed the obstruction daily without giving rise to any appreciable discomfort. A most minute examination showed no trace of the pyloric ring sphincter muscle, but in its place a fold of mucous membrane; this was confirmed by histological examination.

Faber has recently reviewed the literature; it may be remarked that the condition seems almost completely to have escaped attention in this country.

I am unable to add to the single observation in an infant accidentally made by Schäfer, but I show two specimens from adults typical of this congenital hypoplasia of the pyloric ring muscle.

The first is the stomach from a man 38 years of age, who had suffered from the age of 12 with abdominal pain, vomiting, and tetany, of great severity. He came under the care of Dr. Fawcett, to whom I am indebted for the specimen, but died suddenly before operation could be undertaken. The stomach is very greatly dilated. The pyloric canal has been distended and taken up into the body of the stomach, much as the cervical canal is taken up by the pregnant uterus at the commencement of labour. Separating the small duodenum from this huge stomach is a membranous diaphragm, perforated by a small aperture.

This man's father, who also came under Dr. Fawcett's care, suffered apparently from a similar defect of development. At the age of 63 he too was admitted for attacks of abdominal pain and vomiting of "fifty years' duration." At times as much as nine pints of fluid had been removed from the stomach by the pump. The state of his kidneys, however, made operation inadvisable.

I show also a specimen from the museum of Guy's Hospital, of which I think the description in the catalogue is misleading. It shows the pyloric end of a very greatly dilated stomach, which measured 30 in. by 9 in., from a man, aged 38, who had suffered with symptoms of pyloric obstruction since the age of 12. The specimen shows the same hypoplasia of the pylorus, with a fold of mucous membrane in the form of a diaphragm, perforated by a small central aperture.

It is, I think, clear that these two specimens, so alike in every detail, both in their clinical history and in their *post-mortem* appearances, are examples of the congenital pyloric stenosis of the type described by Landerer and Maier.

Oesophageal Obstruction.

In order to complete the list of causes of persistent vomiting in infancy due to anatomical defect, it is necessary to say a word as to the condition of oesophageal stenosis or atresia. Cautley has recently reviewed the literature so exhaustively that there is little that can be usefully added.

Etiology.—A study of the developmental defects which involve the oesophagus entails also a study of similar defects in larynx and trachea.

Keith has discussed the results of abnormality in the development of the tracheo-oesophageal septum. De Vries of Amsterdam has figured diagrammatically the possible results of failure of this septum to develop normally, and has found in Continental literature cases recorded which illustrate every variety. By far the most common form is that in which atresia of the oesophagus is combined with an opening between the lower oesophagus, below the atresia, and the trachea. The opening may be wide or it may be narrow. A similar atresia or stenosis

of the larynx with a communication between the normal oesophagus and the lower trachea or a bronchus is also encountered. On the other hand, atresia of oesophagus without communication with the trachea is very rare. Atresia or stenosis of larynx without communication with oesophagus may also occur. A small fistulous communication between the two passages, due to developmental error, may be present without other defect, or it may complicate the more usual oesophageal atresia. Traction diverticula may represent such a fistulous communication in an incomplete form.

Symptoms.—In the form most frequently met with—oesophageal atresia, with communication between the lower oesophagus and the trachea—death invariably follows within a few days. The child, though sucking strongly and hungrily, is able to swallow only the first few mouthfuls; thereafter the attempt to swallow leads to a free regurgitation from the mouth and the nose. The attempt to take food, moreover, has commonly to be given up because of asphyxial attacks or attacks of choking and coughing. A sound is held up, very often at a distance of some 10 cm. from the gums. The shadow of an opaque meal shows clearly the obstruction in the oesophagus. Death is commonly from an inhalation bronchopneumonia, due to the fistulous opening between trachea and the lower segment below the obstruction. In a few cases the respiratory movements have served to bring about great inflation of the stomach with air which has passed along the same route. The existence of this communication serves to make even the desperate expedient of gastrostomy useless and inadvisable.

In oesophageal obstruction the regurgitation of the milk is so clearly due to a failure to swallow that the condition can hardly be confused with any other. Even in diaphragmatic hernia, with the stomach within the thoracic cavity, the difficulty does not concern the act of swallowing, although here again we may meet with asphyxial attacks which are produced by the attempt to take food. In oesophageal stenosis, as distinct from atresic, symptoms are seldom prominent during infancy while the diet remains fluid. The cases present themselves for examination in later childhood.

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PUERPERAL SEPSIS IN WALES.*

BY

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THE tables and diagrams exhibited, taken in conjunction with those for previous years, show that Wales has a consistently high maternal mortality rate, and that the Welsh figures are much higher than the combined figures for England and Wales. Further, the fact emerges that whilst the "sepsis" death rates are somewhat higher in Wales than in England and Wales, the chief disproportion is from "other causes." I have to thank the Registrar-General for permission to quote the figures in the table relating to 1923, which have not yet been published.

Distribution for Wales and for England and Wales of Mortality of Women in Childbirth, per 1,000 Children Born Alive, distinguishing Septic and other Causes, 1921, 1922, and 1923.

	1921.		1922.		1923.	
	Wales.	Eng'and and Wales.	Wales.	England and Wales.	Wales.	England and Wales.
County Boroughs—						
Sepsis	1.35	1.54	3.32	1.62	1.94	1.41
Other causes ...	2.99	2.40	3.34	2.28	2.67	2.60
All causes ...	4.34	3.94	6.56	3 90	4.61	4.01
Other Urban Districts—						
Sepsis	1.72	1.27	1.31	1.27	1.49	1.25
Other causes ...	3.47	2.76	3.77	2.68	3.92	2.67
All causes ...	5.19	4.03	5.08	3.95	5.41	3.92
Rural Districts—						
Sepsis	1.80	1.25	1.45	1 16	1.51	1.15
Other causes ...	4.55	2.97	3.83	2.85	4.54	2.72
All causes ...	6.35	4.22	5.28	4.01	6.05	3.87
All Districts—						
Sepsis	1.67	1.38	1.75	1.38	1.59	1.30
Other causes ...	3.68	2.53	3.68	2.43	3.83	2.51
All causes ...	5.35	3.91	5.43	3.81	5.42	3.81

The three types of population compared are—

(1) County borough populations, which are truly urban in character.
(2) Other urban districts, which contain a large number of people living under semi-rural conditions.
(3) Rural districts, the bulk of whose populations are country dwellers.

It will be seen that in England and Wales as a whole the death rate from sepsis is lowest in rural districts, and becomes higher proportionately as the urbanization of the population increases. With regard to the death rates from "other causes," the position is reversed. The more highly urbanized populations show the lowest maternal mortality from "other causes." This may be attributable to the better medical and surgical facilities available and to the provision of maternity beds.

In Wales the sepsis death rates show no regular variation with the type of population concerned; but regarding deaths from "other causes," the table shows how much greater is the risk for the rural mothers than for the mothers in the urbanized communities.

The first report of the Welsh Consultative Council draws attention to the fact that Wales is a rugged and mountainous area, consisting for the most part of rural counties sparsely populated, with exceptional difficulties

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in intercommunication, and also containing some very congested industrial districts where the population has accumulated within recent years with a rapidity that has created unfortunate conditions for the amenities of life and the health of the people. A special feature of importance is the marked contrast in population distribution existing between, on the one hand, the area covered by the geographical counties of Glamorgan and Monmouth, and, on the other hand, the area covered by the remaining eleven counties. The estimated population of Wales in the recent census (1923) is 2,704,000 in round figures. Of this total 1,765,000 reside in the geographical counties of Glamorgan (1,298,500) and Monmouth (466,500). Thus approximately two-thirds of the entire population of Wales live in two geographical counties, the remaining one-third being spread over eleven counties, the average population of which is only 85,000 (round figures).

We have sent in from the maternity department of the Cardiff Royal Infirmary our quota of records of puerperal sepsis, and these have been merged in the consolidated report of the Obstetrical and Gynaecological Section. Apart, however, from the purely clinical and laboratory aspect of the subject, I venture to offer to the Congress some observations, arising out of certain visits of inquiry, made to some seven or eight centres in the Principality during 1923-24. On four of these occasions—one in North and three in South Wales—I was accompanied by some colleagues of the Council and of the Welsh Board of Health, and it was a special advantage to meet the medical officers of health (county and district) and representatives of health committees, nursing associations, practising midwives, insurance committees, voluntary organizations, and others interested in general health questions. The conference was held in the morning, and in the afternoon the doctors of the area attended in goodly numbers, and a frank and unfettered discussion ensued. Nothing was more striking than the keen desire on the part of the members of the profession and of the various bodies represented and concerned to bring about a betterment in the mortality and morbidity rates associated with childbirth and childbed. I will endeavour to indicate some of what appear to me to be the more important facts emerging and impressions gained at these local inquiries.

1. *Locality.*—As between rural, industrial, and mixed areas it would seem that the incidence of maternal mortality from puerperal sepsis is not demonstrably influenced to an appreciable degree by geographical location or by questions affecting distribution of population.

2. *Midwives.*—Although some medical practitioners consider that the old bona-fide midwife was more likely to send for medical help on the occurrence of difficulties, the opinion of the doctors generally, as well as of the various representatives, was strongly in favour of a larger supply and a more satisfactory distribution of fully qualified midwives. It was agreed that such a distribution might be effected on lines which allowed of a reasonable degree of freedom of choice by the patients and satisfactory sharing of the work by the midwives. A systematic distribution should also provide, by substitution or otherwise, for the contingency of midwives becoming "contact" with septic or other infective conditions.

3. *Midwives, Health Visitors, and District Nurses.*—It was generally agreed that, subject to satisfactory distribution, the midwives should be restricted to the practice of midwifery, but that where this was not practicable—for instance, in some rural areas—it was preferable to combine the duties of the midwife with those of the health visitor rather than with those of the district nurse.

4. *Home Helps.*—Some divergence of opinion was evident as to the feasibility of establishing the status of what are called "home helps" in any health scheme. The really efficient home help must represent a consolidation of good qualities rarely seen.

5. *Maternity Homes, Maternity Wards, and Ante-natal Clinics.*—The value of these was fully recognized at the conferences in all the centres visited. In certain areas local opinion had to be educated as to the essential value of these establishments in order to lead to their being freely used. Prejudices in regard to the work of the trained midwives and health visitors had at first existed, but had in large measure disappeared, and the evidence went to show that where lying-in beds and ante-natal clinics had been made available a similar experience had accrued. To have the ante-natal clinic within the curtilage of the maternity hospital had been found to be a convenient and educative arrangement. In the larger towns it had been found of great advantage to link up the maternity ward or wards with the general hospital, so that the service of the medical, surgical, and special departments would, if required, be available for the expectant or parturient mother. The importance of the medical officers of the ante-natal clinics keeping in touch with the general practitioners and advising them of any abnormality discovered was strongly emphasized, and in midwives' as well as doctors' cases the value of periodic examination of the urine during pregnancy was readily conceded.

6. *Mothers' Teeth.*—In the rural areas, especially, care of the teeth during pregnancy was little thought of, and the adage "for every child a tooth" had been expanded into the prevalent belief that in the expectant mother dental caries was inevitable and its treatment undesirable. At one of the inquiries a medical officer of health stated that the condition of the mouths of the mothers who attended the infant welfare centres was "appalling"; and at another a medical practitioner said that the condition of the teeth of the people generally was very bad—"that no woman ever thought of going to a dentist unless she had toothache, and that there was a fallacious general belief that women ought never to have their teeth attended to by a dentist during pregnancy." In the rural areas there is difficulty in obtaining the services of qualified dentists.

7. *Nourishment of Expectant Mothers.*—In the more rural areas the inquiries went to show that the general standard of living of the mothers was very poor, and their dietaries inadequate and badly balanced. It was stated that in the smaller homes families seldom saw a joint of fresh meat; that milk was often unobtainable; that the people had not acquired a taste for fresh vegetables which could so easily be grown; and that they seldom had any form of fresh food. The family fare consisted too largely of tea and bread-and-butter—"the teapot never gets cold till late at night"; and the tendency, even where produce was grown, was to sell the best of everything and keep the poorest for consumption at home. Statements were made to the effect that, even in these circumstances, the mothers by their own act "came last," and were often markedly anaemic and debilitated, with the result that at the time of confinement their powers of resistance, whether in regard to infection or other parturient risks, were at the lowest ebb. In the industrial areas the unselfishness of the mother was an important factor, especially under the present economic conditions, both as regards improper and insufficient dietary and also as regards the strain of the almost continuous household duties—in the colliery districts, for instance, where the husband, sons, and lodgers may be engaged in different work shifts at the pits.

8. *Housing Conditions and Environment.*—Much evidence was forthcoming to show the need for a more enlightened public opinion as to the capital importance of sanitation and other hygienic conditions. Apart from the admitted shortage of housing accommodation, the dilapidation of existing houses, and the existence of overcrowding, which are unquestionably contributory factors in the problem, there remains the fact that even in present conditions there is scope for much improvement in the habits and customs prevailing in many parts of the country—improvement that can only be achieved by a vigorous educational effort by health authorities and all who are interested in bringing about a fuller appreciation of the laws of health—both by those who build the houses and by those who live in them. In the country the houses are often very small and badly ventilated. Many of the cottages consist of two rooms with a loft, and the flooring may be of mud or sometimes slate. As many as 20 per cent. of the houses have no sanitary arrangements whatsoever. There is too often a lack of personal and household cleanliness and a general disinclination to change personal or bed clothing. Occasionally women may be confined on the floor, lying on clothing already soiled, to save the bed. In the industrial areas there is a great deal of overcrowding. In the Rhondda district over

10,000 families live in houses occupied by more than one family, and in this and other areas instances were quoted where two or more families lived in the same house, and that of small dimensions, with the result that confinements had often to take place under the most undesirable and unseemly conditions. The plea for the establishment of maternity homes and hospitals in such areas is overwhelming, but the response is slow.

9. *Non-disclosure of Puerperal Sepsis.*—Either avoidably or unavoidably, the requirements with regard to notification are not properly observed. For the five years 1918-22 inclusive, while there were 503 deaths from puerperal sepsis in Wales and Monmouthshire, the number of notifications was only 579, and in some areas the number of deaths exceeded the notifications. This important matter was fully discussed at all the meetings with the doctors, and there was general agreement that, notwithstanding the disabilities in the practices of doctors and midwives which might accrue from notification of sepsis, the urgency of taking all steps to prevent the spread of the infection, as well as to secure such help in the management of the case as the local authority could furnish, should prevent the avoidance of this responsible duty.

Diagnosis.—At the same time many of the practitioners drew attention to some real difficulties. First, as to diagnosis, it was fairly stated that, apart from pyrexial conditions which are quite independent of the puerperium as such, and excluding also the so-called "reactionary" rises in the first twenty-four hours, temporary elevations of temperature from 100° to 102° F. may occur during the first week from errors of diet, constipation, emotion, or other nervous disturbance, or from unimportant mammary conditions. More guidance was asked for in regard to differential diagnosis.

Notification.—As desiderata it would appear to be considered that either a readily applied clinical test should be evolved or a more comprehensive formula employed as the basis for notification. The difficulties might be that with the former not a few cases of sepsis would escape detection, and that the latter would include more than all the cases of infection. At one of the meetings a recommendation was made indicating the desirability of district medical officers arranging with registrars of births and deaths of the sub-districts for the supply of earlier information of deaths caused by puerperal fever, as this would enable the medical officers of health concerned to make prompt inquiries as to actual and contributory causes. Another handicap to notification was the objection sometimes raised by the lying-in woman herself or by her relatives and friends. Notification which results in nothing beyond visitation by various officials cannot be other than unpopular, but if and when it is followed by helpful service and, where necessary, institutional treatment, the prospects of its acceptance and efficiency are more assured.

"*Brad-gyfarfod.*"—Complacency is another contributory cause to inefficiency. This was especially illustrated by the discovery in one of the rural counties of the tradition that a mother recently confined *must* have a rise of temperature, the condition being dignified by the title "bradgyfarfod," which, freely translated, may be taken to mean "a combative meeting," the factors in the combat being regarded as the lochia and the mammary secretion. It is not contended that such a belief is generally current, but it would certainly be true to say that the existence and even the persistence of a temperature in childbed is far too often regarded by the patient and her friends with the minimum of concern.

10. *Attendance by Doctors and Midwives.*—There is considerable diversity in various parts of Wales in regard to the number of confinements attended by midwives only and the number attended by doctors (with or without midwives). Thus, in Merionethshire—a rural county—the proportion of cases attended by doctors is very high, the figures being 18 per cent. attended by midwives only and 82 per cent. by doctors (with or without midwives). At the other extreme, in the Rhondda district (Glamorgan) 84 per cent. were attended by midwives only and 16 per cent. by doctors (with or without midwives). Speaking generally, these variable proportions, as between rural and industrial areas, prevail throughout Wales and Monmouthshire. It would be fallacious to infer from these proportions that the rates of morbidity and mortality follow in either one direction or the other. Fears were expressed in some of the industrial areas that the high proportion of cases attended by midwives was disadvantageous to the patients, but on the whole it was found that in these areas the midwives are well trained and sufficiently impressed with the importance of sending for medical aid as occasion may require. In the rural areas the dearth of trained midwives accounts for the large proportion of cases in which the doctor is engaged, and it is claimed, too, that the unskilled services of the handy-woman contributed largely to the high sepsis rate. It was agreed that an increased supply of qualified midwives is especially urgent for the rural areas.

11. *Ages of Marriage.*—In the counties of Wales and Monmouthshire a comparison of the percentage of the total marriages of women contracted (1) before the age of 21, and (2) after the age of 35, shows that in 1921 there was a higher percentage of early marriages in Wales (18.2) than in England and Wales (14.9), and a lower percentage in the later marriages (Wales 9.3, England and Wales 10.7). It is significant that some of the counties showing the highest percentages of late marriages are also amongst those with the highest maternal mortality rates.

12. *Abortion.*—The impression was gained that abortion and attempted abortion, both by means of drugs and various instruments, is prevalent to a considerable and an increasing degree in the industrial parts of Wales. In one such area with Pontypridd as its population centre the figures show that 11.5 per cent. of the deaths arising out of pregnancy and childbirth were attributed to this cause.

13. *Use of Forceps.*—The question of the use and abuse of the forceps was fully and frankly discussed at the doctors' meetings. There was common agreement in the view that, whilst in a proportion of cases the use of the forceps was advisable or imperative, in no case could the mere saving of time of those in attendance be regarded as a justifiable indication, having regard to the admitted increase in the risks of infection and injury which their employment entails. As to the use of forceps generally, not a few of the doctors claimed that they applied them much less often than was their habit some years ago, and that this was, in part at least, attributable to the good results of ante-natal clinics as well as to pronouncements of some latter-day obstetricians.

14. *Rubber Gloves and Sterilized Obstetrical "Outfits."*—The doctors and the representatives of the midwives concurred in the view that the intelligent use of rubber gloves and the provision of sterilized "outfits" would do much to combat those domestic conditions which so largely increase the risks of septic infection.

15. *Notification of Pregnancy.*—Compulsory notification, however valuable it might be as leading to adequate supervision during pregnancy, was regarded by all parties represented at the various conferences as impracticable. It was thought, however, that the principle of voluntary notification would ultimately prevail when, by wise propaganda and the continued advice of doctors, midwives, and health visitors, the benefits deriving therefrom were more generally appreciated.

Summary and Conclusion.

The facts and responsible opinions emerging from these representative conferences justify the conclusion that the efforts which the community must make toward the solving of this urgent problem must include the following:

1. A more complete and better organized provision of thoroughly well trained and suitably educated midwives and health visitors.

2. A considerable extension of well supervised schemes for the ante-natal supervision of mothers, both domiciliary and at clinics.

3. An extended and improved supply of milk and other necessary forms of nourishment for expectant and nursing mothers.

4. A very substantial addition to the existing provision of maternity homes and of maternity wards in or in connexion with the general hospitals.

Finally, I am convinced that by better organized clinical and laboratory research such further light can be thrown

upon the predisposing and the actual causes of puerperal sepsis as will lead to a much larger measure of prevention and to more effective treatment, and there can be little doubt that a very real contribution to that end will be reckoned among the many good results of this Congress.

A CLINICAL AND BACTERIOLOGICAL INVESTIGATION OF PUERPERAL FEVER

*IN THE ROTUNDA HOSPITAL, DUBLIN.**

BY

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THE 57 cases of acute puerperal fever considered in this paper were treated in the Rotunda Hospital during the past four years. The deaths numbered 29 (51 per cent.). Fifteen cases developed amongst patients wholly treated in the hospital and 9 died; 25 developed in the hospital district and 7 died; 17 were patients sent into hospital either late in labour with complications, or after delivery with fever, having been previously treated but not in the hospital district, and of these cases 13 died.

INCIDENCE OF INFECTION.

During the four years 14,380 confinements were attended —6,810 in the hospital and 7,570 in the hospital district— and of these 40 appear as acute puerperal sepsis, with 16 deaths; this gives an incidence of infection of 2.8 per 1,000 and a mortality of 1.1 per 1,000. Of the hospital cases, 25 were spontaneous deliveries, 2 were simple low forceps, and 1 a breech; of these 28 cases 8 died. Two cases were first seen after complete abortions, and both died. Of the remaining 10 cases Caesarean section was performed in 2 and pubiotomy in 1, secondary post-partum haemorrhage occurred in 1, and in 6 manual removal of the placenta was practised; of these 6 died.

Three cases were almost certainly not of genital origin.

Case 1 was spontaneously delivered and had returned home after a perfectly normal puerperium; on the eleventh day she suffered from retention of urine, and had to be relieved by catheter; on the fourteenth evening she had a rigor, and died seven days later. The history suggests that infection occurred at the time of catheterization.

Case 2 died of acute endocarditis; her morbility started with acute tonsillitis; laparotomy was done on the twenty-second day and the peritoneum and pelvic organs found normal. Uterine swabs were persistently sterile.

Case 3 had been seriously ill with rigors and high fever for several days before labour; she was confined prematurely of a macerated foetus, and died of acute endocarditis. The only reason for suspecting a genital origin in these two cases was the removal of the placentae manually.

Excluding these three cases, there remain 27 infections after normal deliveries, with 7 deaths; and 8 infections after complicated labours, with 4 deaths. Among 17 cases sent into hospital on account of difficulty or complications previously treated, 13 deaths occurred; omitting 4 cases that ended in spontaneous delivery, although 3 died, there are 13 seriously protracted labours followed by infection, with 10 deaths. Although the incidence of infection amongst cases wholly treated in the hospital is only 2.2 per 1,000, compared with 3.3 per 1,000 cases attended in the hospital district, the mortality in the hospital is 1.3 per 1,000, against 0.9 per 1,000 in the district.

Conclusions.

The incidence of acute puerperal infection should not reach 1 per 1,000. It must be recognized that complicated cases met with in the district are sent into hospital early for treatment.

Any interference in labour, other than low forceps over the perineum and simple laceration of the perineum, considerably increases the incidence of infection and the resulting mortality.

Impacted labour, particularly with devitalization of the pelvic tissues and debilitating haemorrhages, increases the incidence more than any other cause, and the resulting mortality is very great.

SOURCE OF INFECTION.

There has never been any traceable connexion, by vaginal examination, between two cases in the hospital or in the district, but there have been suspicious instances of a second case developing while another was under treatment, although there has not even been ward contact.

Table showing Nature of Infecting Organisms.

	Cases.	Deaths
Haemolytic streptococci	32	14
Non-haemolytic streptococci ...	8	4
Anaerobic streptococci	1	1
Streptococci not classed	6	1
Gram-positive cocci (smears only examined)	3	2
Bacillus welchii	1	1
Cases not examined	6	6

There is little reason to suppose that the three unclassed cocci were other than streptococci, or that the six fatal cases not examined would have varied from those examined. One case gave *Staphylococci aureus* from the uterus, but haemolytic streptococci from the heart and lungs *post mortem*.

Conclusions.

From these and other observations* it may be concluded:

(1) That acute puerperal infection is almost invariably due to streptococci, most commonly haemolytic.

(2) That cultures made from the interior of the uterus during the puerperium are of the greatest possible value in diagnosis. Material should be cultured within a few hours if a negative result as to streptococci is to be accepted.

(3) That blood cultures are a further assistance if they are positive, but when negative do not exclude serious infection.

(4) That when haemolytic streptococci are obtained from any part the prognosis is most serious, and probably the infection is always exogenous in origin.

(5) That non-haemolytic streptococci from the uterus is serious, and from the blood most serious.

(6) That non-haemolytic streptococci from the uterus, the blood, or from the uterus and blood, is probably often of an extragenital origin.

(7) That negative results for streptococci from the cervix may usually be accepted, provided the culture is not dominated by other organisms.

(8) That cultures from the blood positive to either haemolytic or non-haemolytic streptococci are equally serious, but neither is necessarily fatal.

(9) That *Staphylococcus aureus*, *Bacillus coli*, and gonococci are likely to produce local infections, but do not tend to become general.

CLINICAL MANIFESTATIONS.

Onset of Fever and Period of Invasion.

Of the 57 cases recorded, 24 had a sudden onset, in 6 with rigor and 2 with profuse sweating, the previous temperature having been perfectly normal; 4 had a sudden rise, 2 with rigor, and preceded by slight elevation; 4 had a gradual rise to a high level. The remaining 25 all had elevation of temperature ante partum, from delivery, or within thirty-six hours after delivery, except 7, who were in collapse when delivered or first seen and died without rallying, and 2 others who developed high temperatures when they recovered from the primary collapse.

* Abridged text of a paper preliminary to a discussion on puerperal sepsis at the British Congress of Obstetrics and Gynaecology, London, April 22nd.

* Omitted here.

Of the 28 cases with a sudden rise, one had protracted labour requiring pubiotomy, in 2 the placenta was removed manually, one had late post-partum haemorrhage, and in one the presentation was a breech; otherwise the labours were easy. In 21 cases the onset was on the third or fourth day, and in 4 on the second day. The cases with a gradual onset were all easy deliveries. The 25 cases with elevated temperature from or before the first day include only 6 cases with easy deliveries, but 2 of these were abortions, one had post-partum haemorrhage, and one had innumerable vaginal examinations, leaving only 2 easy deliveries not interfered with. In several of these cases collapse temperature, with very rapid or imperceptible pulse, developing shortly after delivery and persisting to death, was the only indication of infection. In such cases the peritoneum will invariably be found infected, without any reaction or symptoms. Professor Crichton of Capetown reported that, having seen an observation on this subject in the last Rotunda report, he had a blood culture made just before death in a case of unaccountable shock following delivery by craniotomy, and found pure haemolytic streptococci. The fact has been established in the Rotunda Hospital, not only in maternity cases that have been tested, but also in gynaecological cases dying of apparent post-operative shock.

Conclusions.

That the incubation period of acute puerperal sepsis is probably three days.

That when the patient is not debilitated the onset is sudden, sometimes with rigor.

That damage to tissues and debility from protracted labour disguise the onset.

That collapse setting in after delivery and progressing to rapid death is often the only evidence of infection introduced during a protracted labour.

That "labour shock" is never a justifiable diagnosis of the cause of death after protracted labour until infection has been excluded by a cultural examination of a swab from the peritoneal cavity. These cases are frequently the most rapid and virulent type of sepsis.

PROGNOSIS.

Rigors occurred in 14 of the 57 cases in the table and in 2 of the 22 morbidity cases. Profuse sweating, which was probably an abortive rigor, occurred in 3 cases. In 4 cases rigor or sweating only occurred at the onset of fever, in 13 cases they were repeated or developed later. Three patients had rigors almost daily for several weeks, and 2 recovered. Six cases with rigors died.

The occurrence of rigors indicates the more serious type of infection, but nothing as to the course likely to be followed. High persistent or remittent temperature with high spikes is always indicative of serious infection. A four-hourly chart is essential to show the characters. In the second week persistent high temperature is bad, but very high spikes are not necessarily of ill omen if the remissions are good. The pulse commonly follows the temperature; when proportionally lower it is good, but when above the prognosis is bad.

The lochia seldom shows change unless after protracted labour, when it may be profuse and is often fetid. Absence of lochia on the second or third day of fever is a bad sign, but change to pus or the appearance of pus after absence may be considered a definite improvement. Necrosis of tissue or even gangrene and puerperal ulcer of the vulva and vagina do not necessarily indicate acute infection. In the absence of necrosis and fetid lochia the involution of the uterus is frequently normal.

DURATION.

Taking the duration of the disease from the first evidence of fever until either death or recovery, then 14 cases terminated in the first week; only 3 recovered, the other 11 succumbed to the shock of invasion. In 13 patients the fever persisted for over twenty-two days, and 8 of these finally died; 9 developed secondary conditions such as abscesses, peritonitis, or endocarditis. The remaining 30 cases terminated in the second or third week—20 recovered and 10 died.

Conclusions.

The duration of the fever is most commonly ten to twenty days. A number of patients succumb from the intensity of the onset, and this is promoted by protracted labour causing damage to tissue. When a partial resistance is established secondary complications develop and the cases may be very protracted; the prognosis is not improved—it depends upon the site and nature of the secondary developments.

TREATMENT.

Acute puerperal fever appears to be due to invasion by an exogenous organism, and the result depends upon the powers of the patient to resist the invasion or establish a resistance to overcome the infection. So far no specific remedy has been found, and dependence must be placed on general tonic treatment. When evidence of resistance appears, as by local formation of pus, benefit will be derived from drainage or removal of the abscess, but removal of tissue will not produce benefit if resistance has not previously developed.

Antistreptococcal Serum.—Polyvalent serum was used in 34 of the cases in the table, and 17 died. Of the 24 cases not given serum 10 died. The dose given varied from 20 to 100 c.cm., most commonly 20 or 30 c.cm., repeated once or twice. Prophylactic doses of 30 to 60 c.cm., sometimes repeated in 30 to 40 c.cm., were given in 16 cases; 5 of these cases are included in the table, and all died; they were all cases of protracted labour treated outside the hospital. The remaining 11 cases did not develop infection, but only 2 were treated outside the hospital. No conclusions can be drawn from these facts, but serum does no harm, and is given as a routine in suspected cases in doses of 30 c.cm. repeated once or twice.

Iodine.—Intravenous injections of 10 c.cm. of collosol iodine are given on the same day or the day after serum is started, and repeated in doses of 10 to 40 c.cm. at twenty-four to forty-eight hour intervals. The results sometimes suggest extraordinary benefit, and the injections are never detrimental.

Sodium Bicarbonate.—Intravenous injections of sodium bicarbonate solution (0.9), 20 to 40 ounces repeated once or twice, or given by repeated rectal injections, appear to do good in some cases, especially when the patient begins to show debility.

Douching appears to be useless in the symptomless cases, and entails the risk of peritoneal infection directly through the Fallopian tubes, which are quite patent in the unresisted cases. On the other hand, when pus has formed in the uterus a single or even repeated douche is of unquestionable benefit. Also in cases with profuse fetid lochia a simple douche does good; but no attempt should ever be made to remove material with either a dull or sharp curette or even the finger, and a douche is better not resorted to until drainage by sitting up, even out of bed, has been tried and failed. All cases should be drained by free movement and frequent sitting upright.

Operative Procedures.—Whenever pus forms it should be evacuated—cellulitic abscesses, above Poupart's ligament, through the vaginal fornices, or even by laparotomy. If multiple abscesses form in the uterus, hysterectomy, vaginal or abdominal, is indicated. If peritoneal fluid forms it should be drained. When there is suggestion of pus formation in the pelvis but the site is doubtful, a laparotomy is advisable, as any site can be reached and the pelvis drained. Until localization has developed operative measures appear useless. All cases that continue into the third or fourth week should be closely watched for local abscess formation.

Post-mortem Examination.

In the great majority of the cases that died an examination of the abdomen and pelvis at least was made. With the exception of the cases with sloughing or necrosis of tissue the organs showed little or no change from the normal, beyond anaemia and slight flabbiness. In no case without evidence of reaction were the pelvic veins thrombosed, and thrombosis was absent when looked for in the few cases with pus formation.

AN INVESTIGATION INTO THE ETIOLOGY OF PUERPERAL FEVER.*

BY

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WHILE certain cases of puerperal sepsis are due to staphylococci, *B. coli*, or other bacteria, the majority are attributable to streptococci. Of these the greater number are caused by haemolytic streptococci (chiefly *Strep. pyogenes*), but the residue of cases, due to non-haemolytic streptococci (*viridans* type) are sufficiently numerous to deserve consideration.

Infection of the uterus, as of other parts of the body, may be either exogenous or endogenous. There can be no doubt that a true exogenous infection does occur, as is shown by the recorded instances of doctors and midwives acting as carriers of infection. In many cases, however, the possibility of this mode of infection seems to be slight, and it was with the object of throwing light on what may, for the moment, be called spontaneous puerperal sepsis that the investigation here recorded was undertaken. Briefly stated, we sought to discover whether, in the case of normal labours, streptococci were present in the vagina before delivery and in the vagina and uterus after delivery and of what type. All the cases examined were intern patients in the Rotunda Hospital, Dublin, and, as is to be expected, show a higher percentage of abnormalities than would a normal series. In only one, however, was there any evidence of the existence of any septic condition in the body before delivery.

Swabs were taken from the posterior fornix of the vagina either on admission or soon after. In the majority of cases labour had commenced when the specimens were collected. In a small number of cases where, for some reason, a swab was not then taken, one was secured after the rupture of the membranes. This was also done occasionally in addition to the first swabbing. In all cases swabs of the posterior fornix and of the interior of the uterus were taken during the puerperium, usually between the second and the seventh day after delivery.

Method of Swabbing.

The patient was placed in the left lateral or Sims's position. The vulva was opened and a Sims's speculum passed in to draw back the perineum, thus fully exposing the cervix. The vaginal swabs were then taken from the posterior fornix. For the uterine swabs the external os and just inside was wiped completely clear of discharge. The cervix was then steadied with a clip and was again wiped out with sterile cotton passed well inside and the culture swab passed directly up into the uterine cavity. The swabs were obtained between noon and 2 p.m., so as to be sent to the laboratory for culture at 2 p.m. The first eighteen in the series were taken by Dr. Wyndham Williams and the remainder by Dr. C. Coghlan, who were attending post-graduate courses. To both these gentlemen we are deeply indebted for their co-operation and for their interest in the investigation.

Since the object of the investigation was to determine whether streptococci were present or not, the laboratory technique was different from that used in dealing with swabs from patients clinically suspected of sepsis, in which cases the diagnosis depends largely on whether streptococci are present in significant numbers, the presence of one or two colonies being usually of no importance. Every effort was made to supply any streptococci present with their optimum nutrient material and to prevent any deaths of the bacteria from drying or delay. Cultures were made within, at most, a few hours of the collection of the swabs. We wish to lay stress on this point: our technique was devised to find whether even a single streptococcus was present on the swab examined. Had the swabs been cultured on solid media, as are swabs sent for diagnostic purposes, the result would have been, in the majority of cases, either no growth or a growth of only a few colonies, and very many of the streptococci actually isolated would have been missed. We satisfied ourselves on this point by carrying out duplicate cultures on solid and fluid media on the first dozen or so swabs. The method we finally relied upon gave infinitely better results than were obtained by the use of solid medium.

Method of Cultivation.

The basis of the fluid medium used for primary culture was trypsin broth (*p*H 7.4) to which was added 20 per cent. of sterile hydrocele fluid and 10 per cent. of a sterile 10 per cent. solution of glucose. The swabs were thoroughly washed out in this medium, which was incubated at 37° C. until the following day, when it was examined. The medium is almost a selective one for streptococci of all varieties, and renders possible their isolation from material in which these organisms are scanty and other bacteria numerous. Streptococci may produce a turbidity with only slight deposit, but more usually form a dense deposit, leaving the upper part of the fluid clear. This deposit was examined microscopically, and if streptococci were seen the result was noted as positive. At the same time the average number of cocci in each chain was recorded. A loopful of the deposit was plated on human blood agar, and the plates incubated for twenty-four hours. Colonies believed to be of streptococci were then subcultured into glucose hydrocele broth, which was incubated until the following day. In many cases two or more colonies were picked where these presented differences visible with a hand lens. The glucose hydrocele broth cultures were examined for purity and to determine the morphology of the streptococci, and subcultured into carbohydrate media for purposes of classification. Blood agar plates were also made which, when examined after twenty-four and again after forty-eight hours, supplied the first basis of classification of the streptococci into the two main groups, haemolytic and non-haemolytic. At the same time notes of the size and morphology of the colonies were made as a control of the other basis of classification.

The classification of streptococci cannot at present be regarded as satisfactory, and since in this investigation some simple basis appeared desirable it was decided to follow Holman's method[1]—splitting up the two main groups of haemolytic and non-haemolytic streptococci by means of the fermentative action of the isolated bacteria on three carbohydrates—lactose, mannite, and salicin. The basis of the medium was equal parts of trypsin broth and 1 per cent. peptone water. Trypsin broth was used, as better growth was secured by its presence than when peptone water was alone employed. It was not used exclusively owing to the possible action of streptococci on the glycerin which is present in it in small amount. It is doubtful if this precaution is really essential, as, in many controls made, no evidence of such action in sufficient amount to introduce any fallacy was observed; 1 per cent. of the carbohydrate was added and also 1 per cent. of Andrade's indicator. The tubes containing this medium were sterilized by the fractional method, and, after steaming, were enriched by the addition of 20 per cent. of sterile hydrocele fluid. They were always incubated for forty-eight hours before use to determine if any had become contaminated. After the three tubes were inoculated with each strain isolated, they were incubated and examined daily for five days. Usually the reactions were sharp and clearly read after twenty-four or, at most, forty-eight hours. Only very rarely were subsequent changes noted.

It is not contended that Holman's classification is perfect. Probably the number of types thus found is too small, but this appears to be preferable to a classification based on fermentative action on a large number of carbohydrates, which results in a multiplication of types. In all cases the morphology of the cocci and types of growth were compared with the results of carbohydrate fermentation, and only in a very few cases was any possible discrepancy observed.

Results.

In all, 158 swabs were examined, and streptococci were found to be present in 101. In 3 cases two types of streptococci were found in the one swab. It is probable that if the number of colonies picked had been increased this would have occurred more frequently. In 13 cases streptococci were seen in the original broth culture, but were not typed. The reason, in 5 cases, was that it was impossible to isolate them owing to the presence of other organisms (*B. proteus*, etc.), while eight accidents in the laboratory (breaking of plates or tubes, too hasty discarding of plates, etc.) were responsible for the other omissions to type the organisms.

* A paper preliminary to a discussion on puerperal sepsis at the British Congress of Obstetrics and Gynaecology, London, April 22nd.

An analysis of the results must now be attempted. For this purpose "probables," as explained above, are treated as if the organism had been correctly typed. The error so introduced, if any, is small.

TABLE I.—*Gross Results Obtained.*

Number of patients	50
Number of swabs	158
Streptococci absent	57
Streptococci present	101
Streptococci found	104
Strep. faecalis	43
Strep. mitis	42
Strep. equinus	10
Strep. salivarius	7
Strep. equi	1
Strep. infrequens	1

Of these streptococci only two, *Strep. equi* and *Strep. infrequens*, were haemolytic. *Strep. equi* was only moderately haemolytic, while *Strep. infrequens* was very actively so. The rarity of the haemolytic streptococci and the fact that neither of those found was identical with the *Strep. pyogenes*, the commonest cause of puerperal sepsis, tend to confirm our preconceived opinion that this organism is usually, if not always, introduced into the vagina from without in those cases in which puerperal sepsis from this cause appears, and that it is incapable of existing there as a saprophyte which becomes pathogenic on reaching the damaged uterine tissues. It must not, however, be forgotten that we only examined fifty cases, and that further material might cause us to change our opinion on this point.

All the other streptococci isolated were of the non-haemolytic or *viridans* type. The most numerous were the *Strep. faecalis* and the *Strep. mitis*, which were about equal in numbers, *Strep. equinus* and *Strep. salivarius* being less frequently found.

TABLE II.—*Showing the Occurrence of the Various Organisms in the Vagina Before Delivery and in the Vagina and Uterus After Delivery.*

	Before Delivery. Vagina.	After Delivery. Vagina.	After Delivery. Uterus.
Number of swabs	58	50	50
Streptococci absent	26	8	23
Streptococci present	32	42	27
Strep. faecalis	16	16	10
Strep. mitis	10	20	13
Strep. equinus	5	3	2
Strep. salivarius	3	2	2
Strep. equi	—	1	—
Strep. infrequens	—	1	—

We may first contrast the bacterial condition of the vagina before and after delivery. The figures seem to show, beyond doubt, that streptococci are more frequently present after than before the birth of the infant. In only 4 of the 50 cases were streptococci absent at all examinations. In 3 streptococci were present in the vagina before delivery, but were not found subsequently, while in 15 they were absent before delivery, but were found in that situation after the birth of the infant. The flushing of the vagina by the waters had evidently no more than a transient effect, if any, which was outweighed by the more suitable environment in which the streptococci found themselves after delivery, owing probably to the food material supplied by the lochia.

From the uterus itself we get our most surprising result. In 27 out of the 50 cases, streptococci were present in the swabs taken from the interior of the uterus with great care during the puerperium. It would appear that invasion of the uterus by vaginal streptococci does occur after delivery, but every invasion does not, of necessity, mean an infection. In four of our cases morbidity was shown by the temperature of the patient. One of these can be eliminated owing to the existence of pyelitis, leaving three for consideration. In two of these streptococci (*Strep. faecalis*) were isolated from the uterus, while the uterine swab from the other contained no streptococci. It is noteworthy that of the 27 instances of uterine invasion, the same organism was present in the uterus as in the vagina in 25; in 1 different organisms were present, and in 1 streptococci were found in the uterus but not in the vagina.

The constancy of the vaginal and uterine flora at the three or more examinations made is worthy of some remark. Out of the 50 cases, in only 4 were all examinations for streptococci negative. In 37, including one case where a double invasion was found, either the same streptococcus or none was found at all examinations. In 9 there was a change of type. It is probable that a more extensive sampling of colonies would have revealed double invasions in many of these cases.

We do not wish to obscure by further analyses of our results what we consider our most important finding—namely, uterine invasions by streptococci in 54 per cent. of cases. While we were satisfied that our technique was good, we felt that we must face one obvious and fair criticism. To pass a swab into the uterus it is necessary to pass through the cervix in intimate contact with the vagina, admittedly containing streptococci. This passage permits the possibility of the picking up, by the swab, of streptococci not actually in the uterus. That this criticism is sound would appear by considering the first 25 and the second 25 of our cases separately. In the first 25 cases 17 uterine invasions were recorded, and only 10 in the second. Two gynaecologists were engaged in the collection of swabs in the first half of the series, both of whom had to learn by experience the best technique. In the second half all the swabs were taken by one individual who had already mastered the technique.

In order to meet this criticism a further investigation, which was confined to the puerperal uterus, was undertaken. The technique, which was as follows, was entirely carried out personally by one of us (G. FG.). The patients were placed in a gynaecological chair, a posterior speculum was gradually passed into the posterior fornix, and the vagina wiped quite clear of lochia. The anterior lip of the cervix was then held and the cervical canal wiped clear. A 3/8 in. glass tube which had about 1 in. of cotton plug at one end and overlapping the edges of the tube, was prepared by boiling, and was then passed direct from the sterilizer for at least 2 in. into the uterine cavity. The culture swab was then passed up the glass tube and dislodged the cotton plug as it entered the uterine cavity. In all cases a flow of lochia came from the uterus into the glass tube, and in most cases flowed freely through the tube. The culture swab was then withdrawn and restored to its protecting test tube. It was thought that it would be helpful to attempt a numerical estimation of any streptococci found in these swabs, and therefore each swab, on receipt, was thoroughly washed in 5 c.cm. of glucose hydrocele broth. Of this 0.5 c.cm. was transferred to a second tube of the same medium and 0.1 c.cm. to a third. A positive finding in the third tube indicated at least 50 streptococci in the swab, in the second 10, and in the first 1. The methods used for the isolation and typing of the streptococci was similar to that previously stated. In this series 25 patients were examined, on either the fifth or sixth day after delivery.

TABLE III.—*Swabs from Puerperal Uterus.*

Patient.	Streptococci found.	No. in Swab.
18 patients	None	—
A. J.	*Strep. mitis*	10
A. M.	*Strep. mitis*	1
M. McL.	*Strep. faecalis*	50
C. D.	*Strep. mitis*	1
M. P.	*Strep. faecalis*	50
C. H.	*Strep. faecalis*	50
M. K.	*Strep. non-haemolyticus* 1	10

Streptococci were therefore found in 28 per cent. of the uteri, as contrasted with 54 per cent. in the first series. This would seem to point to faulty technique in the earlier investigation, but, even if this be allowed, 28 per cent. of positive results is still very considerable. The very sceptical may hesitate to accept a single streptococcus (more probably a single chain of streptococci) as significant, but even if these are discarded there remain 20 per cent. of puerperal uteri invaded by streptococci of the *viridans* type in women exhibiting no sign of morbidity as determinable by temperature, pulse, or local condition.

SUMMARY.

1. Streptococci were found in the vagina before and after delivery in 68 per cent. of the cases examined. They may therefore be regarded as among the normal flora of the part.

2. Haemolytic streptococci were only found twice in the examination of 108 vaginal swabs. *Strep. pyogenes* was never found.

3. The predominant non-haemolytic streptococci of the vagina were *Strep. faecalis* and *Strep. mitis*.

4. Non-haemolytic streptococci were present in the post-partum uterus in at least 20 per cent. of the cases examined.

We hesitate to draw any conclusions from our findings, but we suggest the following without wishing to dogmatize.

1. The commonest form of puerperal sepsis, that caused by haemolytic streptococci (and particularly *Strep. pyogenes*), is due to exogenous infection.

2. Non-haemolytic streptococci do occasionally cause puerperal sepsis. These organisms are present in the vagina of the majority of parturient women and are found fairly frequently in the uterus post partum. They are normal body saprophytes, but are opportunists as regards pathogenicity. (The *Strep. faecalis* may give rise to suppuration in wounds, and the *Strep. mitis* to septicaemia and subacute endocarditis.) Puerperal sepsis due to non-haemolytic streptococci is an endogenous infection. The cause is the streptococci of the vagina *plus* some unknown factor, which may be a local or general lowering of the patient's resistance or a rapidly enhanced virulence of the organism.

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BLOOD COAGULATION TIME IN THE INSANE.

BY

LIEUT.-COLONEL J. R. FORREST, R.A.M.C.(RET.),

TICEHURST.

WHEN discussing with my friend Dr. F. E. Taylor the occurrence of haematoma auris in insane persons, he mentioned that it had been found that in cases of spontaneous haemorrhage into the vitreous the coagulation of the patient's blood had been delayed, and suggested that haematoma auris might be due to the same cause. It was Dr. Taylor's suggestion that induced me to make the investigation here recorded.

I found that the blood coagulation time was markedly prolonged in cases of haematoma auris, and I then deemed it advisable to test the blood of cases of insanity in general. The only reference I can discover in the literature to the blood coagulation time of insane persons is a paper by E. J. Larsen and H. Lind, who in 1920 recorded a series of 50 insane patients. They found that in all these patients the time was within normal range. I have not been able to see the original paper and do not know what method they used.

I have not succeeded in finding any reference to the matter in any of the textbooks or other works to which I have been able to refer. The subject of blood coagulation time, but without reference to insane subjects, has occupied the attention of many observers.

The method of measuring blood coagulation time adopted by different observers not only varies extremely, but there is no uniformity in the end-reaction which is sought. Thus, E. H. Lepper,[1] adopting the method of Dale and Laidlaw, takes the onset of coagulation as the point to be determined. This method is obviously objectionable as coagulation would be hastened by the agitation employed.

J. Addis[3] views under the microscope the edge of a drop of blood suspended in oil and acted on by a current of oil streaming against the edge of the drop. When a continuous smooth flow of the corpuscles ceases he concludes that coagulation has occurred in the drop. The apparatus used is not simple, and is open to the objection that contact with oil hinders or prevents coagulation.

The method of Sir Almroth Wright[4] is the simplest and most easily applicable. I adopted his method in a modified form in my experiments. I used capillary glass tubes 1 mm. in diameter and 6 cm. long; 2 cm. of the tube were filled with finger blood, the blood aspirated into the middle of the tube, and one end sealed in the flame. The unsealed ends are then fixed in plasticine, and nipple, glass tubing, and plasticine are floated in a beaker of water kept at 37° C. A Hagedorn straight needle was used for pricking the finger, momentarily congested by a tape, and it is easy to fill simultaneously the four tubes used for each experiment by holding the tubes fan-shape between finger and thumb and inserting the approximated ends in the drop of blood.

I examined 117 cases, all being free from organic disease. In addition I examined 12 cases of normal sane persons. The average coagulation time in the 117 cases was 4.69 minutes. The average time in 12 normal sane persons was 3.75 minutes. This corresponds closely with the time given by other observers. J. H. Drysdale[5] says that normal coagulation time at temperature of body is about three or four minutes. E. R. Stitt[6] says that by Sabrazès's method finger blood coagulates in three to four minutes at room temperature.

Of the whole 117 cases, 63 gave coagulation times over the normal in sane patients. Of 10 cases of haematoma auris, 7 gave coagulation times above the normal. While these were the general results, it was noted that in 19 cases the time was six minutes, and 11 of these cases were mania. On the other hand, 14 cases gave a time under four minutes, and 10 of these were cases of dementia.

For some reason or another cases of haematoma auris are now very rare among the insane. In the private asylum where I am employed there are only 2 cases (recent), and at the East Sussex County Mental Hospital at Hellingly, with 1,350 patients, there were only 8 cases, and these were all old ones.

Tabulating the results we find—giving coagulation time over the normal: haematoma auris cases, 70 per cent.; insane cases, excluding haematoma, 52.3 per cent.; sane cases, 16.6 per cent. Coagulation time tends to decrease with increase of age of the patient.

Conclusions.

1. The proportion of insane patients showing an abnormal condition of the blood is sufficiently large to indicate a line of treatment.

2. The prolonged coagulation time may well account for malnutrition of the brain tissue, and for the cerebral haemorrhages which so often occur in the insane.

3. The method of determining the coagulation time, as I have described it, is so simple that it can be easily done at the bedside.

4. Further investigation is needed to ascertain the factor or factors which prolong the coagulation time.

Is delayed coagulation in insanes due to decalcification, or to deficiency of prothrombin, or to deficiency of thrombokinase, which activates prothrombin, or which, according to Howell, is of lipoid nature and neutralizes antithrombin?

It is probably *not* due to toxic substances produced by infective agents, as these would liberate a certain amount of nucleo-protein in the blood, and so produce coagulation.[7]

Halliburton[2] says that if we reject the thrombin theory with all its superstructures we accept a physical and not a chemical change as the cause of coagulation.

Sir A. E. Wright[8] points out that diminished coagulability of the blood is of very great practical importance, because it interferes with haemostasis, and also because it conduces to serous haemorrhage (in other words, to increased transudation).

It is to be noted that the observed blood coagulation time varies according to conditions of observation, temperature, etc., and the relative time between sane and insane is the important point. All my observations were made under exactly the same conditions. The absolute time will vary according to the method of observation.

My thanks are due to Dr. Taylor for the suggestion and much kindly advice, and to Dr. J. N. Greene Nolan of the East Sussex County Mental Hospital, Hellingly, where most of the work was done by kind permission of the medical superintendent. The rest of the work was done at Ticehurst House, Sussex, and I have to thank Dr. Colin McDowall for the facilities he gave me.

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[1] *Arch. Middlesex Hosp.*, London, 1912, xxvii, 191-204. [2] Halliburton: *Handbook of Physiology*, p. 470. [3] *Quart. Journ. Exper. Physiol.*, London, 1908, i, 205-334. [4] *The Technique of the Teat and Capillary Glass Tube*, 1921. [5] Allbutt and Rolleston: *System of Med.*, 1905, vol. i, p. 696. [6] *Practical Bacteriology, Blood Work, and Animal Parasitology*, 1925. [7] Martin, S., BRITISH MEDICAL JOURNAL, 1900, i, 811. [8] On the Association of Serous Haemorrhages with Conditions of Defective Blood Coagulability, *Lancet*, September 19th, 1916.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TRACHEOTOMY TUBE WORN FOR OVER SEVENTY YEARS.*

So far as my reading and experience go, the case reported in the JOURNAL of April 18th by Sir Robert Woods is the "record." In the JOURNAL for 1912 (April 6th, p. 816) Mr. W. A. Berridge records the wearing of a tracheotomy tube for over fifty years by a patient who died of senile decay at the age of 81. But in the case of Sir Robert Woods a patient of 81 has worn a tube for seventy years, and it is noted that "she never had bronchitis." These and many similar cases show that a disposition to bronchitis and other respiratory troubles is not a necessary sequel of the permanent wearing of a tracheotomy tube. Many such patients ("cannulards," as they call them in France) enjoy excellent health, earn their living by manual or other labour, play games and dance, and the females bear children after normal accouchements. If stenosis of the larynx is not complete, and the vocal cords, or even one of them, still functions, speaking can be carried on without blocking the tube, if the latter is fitted with a hinged valve. Of course, the operation must have been well carried out and the tube should fit properly. If the opening is made as low as possible in the neck—both for the sake of appearance and for scientific reasons—the tube is easily concealed behind a collar or a veil, and there is no social disability connected with it.

Such satisfactory records should make us pause, in certain cases, before embarking on difficult, tedious, and often unsatisfactory measures for dilating a stenosed larynx.

London, W.1. STCLAIR THOMSON.

ACUTE CHOLECYSTITIS AT THE AGE OF THREE.

THREE years must be a very early age for the occurrence of acute cholecystitis, and this case is therefore thought to be worthy of record.

The child, a girl, was admitted on January 25th, 1925, with acute abdominal pain and vomiting. There was a previous history of eighteen months of vague abdominal pains, but never severe. She had never been jaundiced. At 10.30 p.m. on January 22nd she was awakened by vomiting, and severe pain in the abdomen. On the following day she was much better, and the parents thought she had recovered. The bowels were opened twice, and the stools were of normal colour. On January 24th, at 8.30 p.m., vomiting and abdominal pain again occurred, and continued all night. The bowels did not act. On January 25th the child was said to have been exhausted and was brought to hospital at 7 p.m.

When admitted she looked ill; the face was flushed, the temperature was 100°, the pulse 128, and the respirations 36. She was not jaundiced. The abdomen was distended, moving poorly on respiration. The point of maximum pain was at a spot 1½ in. to the right of the umbilicus and on a level with it. The whole abdomen was rigid, but especially in the right upper quadrant. No tumour or enlargement of the liver could be detected. Rectal examination revealed nothing abnormal. No abnormal urinary constituents were found now or later.

Operation.—Mr. J. E. H. Roberts, on January 25th at 11 p.m., examined the abdomen under an anaesthetic and felt a rounded tumour the size of a golf ball under the right costal margin; it was tense and fairly freely mobile. A right paramedian incision was made at the level of the umbilicus. A little clear fluid was present in the peritoneal cavity. The gall bladder presented at the wound, and was greatly distended (5 in. by 1½ in.). The surface was smooth, shiny, and of a mottled purple colour. About 20 c.cm. of a transparent fluid, grass-green, and of the consistency of bile, was removed by a needle. Careful palpation failed to detect any calculus in any of the biliary passages. The gall bladder was then opened. The mucous membrane was very injected and bled freely. No stone was found with a spoon. A small rubber drainage tube was sewn into the gall bladder, which was dropped back into the abdominal cavity. The remainder of the wound was then closed.

Pathological Examination.—The fluid from the peritoneal cavity on culture yielded *Staphylococcus aureus* and *albus* in the proportion of 1 to 10. The fluid from the gall bladder was acid and contained bile; it was sterile on culture, and no cells or organisms were present in it. Section of portion of the gall-bladder wall showed it to be in a state of acute inflammation.

Except for some bronchitis and a little suppuration in the wound the child made an uninterrupted recovery, and was discharged quite well on March 3rd.

I am indebted to Mr. J. E. H. Roberts, who performed the operation, and to Mr. L. Bathe Rawling, who afterwards had charge of the case, for permission to publish these notes.

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TORSION OF FALLOPIAN TUBES.

IN recent numbers of the BRITISH MEDICAL JOURNAL there have been several references to this condition, which is apparently a definite clinical entity simulating acute appendicitis and affecting normal tubes. The cases recorded occurred during or within a few days of menstruation, and were characterized by abdominal pain and tenderness, rigidity of the lower fibres of the recti, and vomiting.

Reference to some recent textbooks of gynaecology has failed to reveal any mention of the condition, which, however, giving rise as it does to signs of an acute intra-abdominal catastrophe, might well be included in the differential diagnosis of such conditions as appendicitis, salpingitis, or ruptured ectopic gestation.

The following case, for permission to record which I am indebted to Dr. J. T. Bailey, exemplifies the condition.

A girl of 16 was admitted to hospital on August 1st, 1924, suffering from acute pain in the lower abdomen and vomiting. The attack had commenced the day before. She had not been constipated previously and was menstruating at the time. The lower fibres of both recti were rigid, particularly those of the muscle of the right side. There was tenderness in the right iliac fossa.

Laparotomy was performed, splitting the lower fibres of the right rectus. The ampullary part of the right Fallopian tube was black, swollen, and twisted on its mesosalpinx. The left tube, which had also undergone torsion but to a less extent, was congested, but not black, and on this side the twist was undone and the tube left *in situ*. The right tube was amputated and appendicectomy performed. Convalescence was uneventful.

A section of the right tube showed "a dense haemorrhage in which the remains of the wall of the tube could be seen." Dr. E. W. Bowell, assistant director of the Clinical Research Association, to whom I am indebted for the pathological report, commenting on this specimen, stated that several specimens very like it had been sent to him for examination. The specimens were mostly from young girls who had recently begun to menstruate. One was from a girl of 14, who was athletic, and it was suggested that exercise was a factor in her case.

In reviewing the records of cases of torsion of Fallopian tubes the outstanding feature is the absence of any external cause of torsion, such as adhesions, herniae, or the presence of tumours. Factors in the etiology would appear to be:

1. *Menstruation.*—The cases recorded have occurred during or in relation to menstruation. Several have occurred in association with the onset of menstruation at puberty, but P. R. Michaël has reported a case in a woman of 47 in whom, however, a normal menstrual period commenced three days after operation (*Epitome*, March 14th, 1925, para. 287).

2. *An abnormally* long and free mesosalpinx.

3. *Some muscular effort.*—In one or two instances attacks appear to have been precipitated by some strenuous exertion.

Torsion of otherwise normal Fallopian tubes is rare, but sufficiently common to merit attention and to be borne in mind when considering the differential diagnosis of acute intra-abdominal conditions. It most closely resembles appendicitis.

The Infirmary, Stockport. LAMBERT ROGERS, F.R.C.S.Ed.

* As Sir StClair Thomson notes, and another correspondent has written to a similar effect on this point, "over sixty years" in the title of Sir Robert Woods's memorandum was an understatement. The lady seems in fact to have worn the tube for seventy years.

Congress of Obstetrics and Gynaecology.

THE fifth British Congress of Obstetrics and Gynaecology is being held this week in London at the house of the Royal Society of Medicine under the presidency of Dr. H. Russell Andrews. The constituent societies are the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, the Edinburgh Obstetrical Society, the North of England Obstetrical and Gynaecological Society, the Midland Obstetrical and Gynaecological Society, the Section of Obstetrics of the Royal Academy of Medicine in Ireland, and the Ulster Medical Society. The official guests of the Congress are Professor J. Whitridge Williams of Baltimore and Professor W. W. Chipman of Montreal. The proceedings opened on the morning of Wednesday, April 22nd, with the President of the Congress in the chair, when reports-in-chief on the "Prognosis and treatment of puerperal sepsis" were presented by a London Committee and a North of England Committee, as recorded below. These reports were followed by communications by Sir Ewen J. Maclean on puerperal sepsis in Wales (printed in full at page 770 this week); by Dr. Gibbon FitzGibbon and Professor J. W. Bigger of Dublin (see pp. 773 and 775); and by Dr. L. P. Lockhart of Manchester on bacteriological examinations during pregnancy. Dr. Lockhart's paper comprised an abstract of a report of an investigation, which appears in full in the current issue of the *Journal of Obstetrics and Gynaecology*. The afternoon of April 22nd was devoted to a discussion on puerperal sepsis, of which we hope to publish a report in our next issue, together with an account of the later proceedings of the Congress.

PUERPERAL SEPSIS.

LONDON COMMITTEE'S REPORT.

The following report on puerperal sepsis, compiled by a committee appointed by the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, is signed by Dr. H. Russell Andrews (chairman), Sir Ewen J. Maclean, and Mr. Aleck Bourne. In preparing this report, and that of the North of England Committee, for publication here, some abridgement has been necessary.

INTRODUCTORY.

We were asked to prepare a report, on as large a number of cases of puerperal sepsis as possible, which would serve as a basis of discussion. We sent out a large number of forms with numerous headings under which details of cases of puerperal sepsis were to be entered, and, on the suggestion of the North of England Committee, laid down rules as to what cases were to be considered suitable to be recorded, as follows:

"Reference is made only to cases arising within the first twenty-one days of the puerperium from infections of the placental site or from lacerations of the genital canal. Positive indications of blood infections should be taken to be one or more of the following: (1) isolation of the organism, by blood culture; (2) prolonged pyrexia; (3) repeated rigors; (4) pyaemia, including septic pneumonia; (5) death from puerperal fever irrespective of *ante-mortem* symptoms."

The response from some parts of the country was most encouraging to the continuance of this form of collective investigation, while the response from other parts was meagre in the extreme. Altogether details of 408 cases were sent in. A careful process of selection reduced the numbers to 247. Some had to be excluded as not showing sufficient evidence of blood infection, others because the notes were not sufficiently full. In a great many of the cases some of the details asked for were missing. This was inevitable, as in few, if any, institutions are septic puerperal cases allotted to students for routine history-taking and note-taking, and the officers in charge of these cases have usually more urgent duties than that of taking comprehensive notes.

The report is based on analyses of these 247 cases, in which recovery took place in 160, and death in 87. (We do not wish it to be thought for a moment that we consider that these figures prove that 64 per cent. of cases of puerperal sepsis recover and 36 per cent. die!) The original arrangement was that the North of England report, which was to be printed separately, should be blended with this report, but it was decided later that if this blending was to be carried out it would have to be done after the meeting of the Congress, as it might be necessary to spend a good deal of time over it in case the selection of cases had been made more drastically by one committee than by the other.

ETIOLOGY.

A statement which is frequently heard at consultations is that puerperal sepsis occurs in cases in which the labour has been left to nature, the medical attendant possibly not even making a vaginal examination, and that cases in which a great deal has to be done seldom "go wrong." Our figures do not at all bear out the latter part of this view, but show that in 25 per cent. of cases there is no obvious etiological factor present.

In 160 cases in which recovery took place there were 42, or 26 per cent., and in 87 fatal cases there were 19, or 22 per cent., in which the labour could be said to be normal and spontaneous, with no special risk of infection from lacerations, cervical or vaginal discharge, or from other cases. This is the group which presents the greatest problem.

Exhaustion.—In the cases in which recovery took place the labour was said to be prolonged in 16 cases. In one of these cases it apparently finished spontaneously. The mode of delivery in the other cases was: forceps, 3; forceps, craniotomy, tear, 1; forceps, manual removal of placenta, 1; pubiotomy, sloughing of vagina, 1; breech, 1; breech, laceration, 1; breech, blunt hook, very severe laceration, 1; extensive laceration, 1; craniotomy, 5. In 65 fatal cases excessive length of the labour is noted in 7 cases; protracted labour, pubiotomy, forceps, 1; protracted labour, forceps, episiotomy, perineal tear, 1; protracted labour, putrid liquor amnii, episiotomy, forceps tear, 1; long impaction of head, craniotomy, 1; long impaction of shoulder, version, 1; prolonged labour, six days, 1; prolonged breech extraction, 1. Exhaustion was probably a factor in many other cases—for example, "obstructed labour, forceps"; "forceps applied four times, tear"; "forceps, cephalotripsy, bladder injured, terrible tearing"; "many attempts at delivery by the forceps and version"; "impacted shoulder, internal version, small tear of anterior wall of uterus," etc. It may be taken that in any forcible method of delivery which resulted in extensive laceration exhaustion may have been present.

Laceration, Bruising, and Manipulation.—In 160 cases in which recovery took place there were 42 cases of normal, spontaneous labour with no tear, with no retention of a portion of placenta, no gonococcal or cervical discharge, and no direct or indirect contact with septic cases—that is, 26 per cent. in which there was no suggestion of a source of infection, except that in some cases the recorder blamed the midwife or the doctor, on what evidence we do not know. [The Committee's tabular analysis of the abnormalities or interferences in the other 118 cases is omitted here.] Thus there was some extra risk of infection in no less than 74 per cent. of the cases in which recovery took place, and in 21 cases or 13 per cent. of the whole number the placenta was removed by hand. In 37 cases *at least* there was some laceration. These figures may be analysed from another point of view—namely, "What amount of interference had there been in the labours of patients who became infected and recovered?" Cases in which lacerations occurring in spontaneous labour were sutured, and in which a portion of retained placenta was removed, are not included under the term "interference in labour." (We do not suggest that the interference was unnecessary in the circumstances and are making no criticism, but are simply recording facts from

the figures given above.) Out of 160 labours of patients who recovered there was interference in 78, or 49 per cent. The forceps was used, frequently with resulting laceration, sometimes followed by craniotomy or version, in 44 cases. Version was performed in 4 cases, craniotomy in 6 cases, Caesarean section in 2 cases, and pubiotomy in 2 cases. Labour was induced in 6 cases, assistance was given with the breech in advance in 5 cases. In one case the patient tried to bring on labour herself by intravaginal manipulations. In 21 cases the placenta was removed manually. Out of 87 fatal cases, labour was spontaneous and normal in 19; spontaneous with laceration of the perineum, vagina, or cervix in 9; spontaneous with retention of a portion of placenta in 5; spontaneous with bleeding in 2; spontaneous with "contact" in 5—that is, spontaneous in 40 or 46 per cent. (One of the "spontaneous and normal" labours was followed by gangrene of the vagina and uterus.) In the remaining 47 cases, or 54 per cent., labour was abnormal. [The details of abnormal labour in the 87 fatal cases are omitted here.] In 47 fatal cases out of 87 there was interference in the labour—that is, in 54 per cent. In 57 fatal cases out of 87 there was some special risk of infection (retention of a portion of placenta after spontaneous labour being included and tearing in spontaneous labour being excluded)—that is, in 65 per cent. of cases. An analysis of the 160 non-fatal and 87 fatal cases taken together gives the following figures:

Out of 247 cases labour was spontaneous in 122, or 49.4 per cent.; there was interference in labour in 125, or 50.6 per cent.

Excluding laceration in spontaneous labour there was some special risk of infection in 154 cases, or 63 per cent.

Including laceration in spontaneous labour there was some special risk of infection in 186 cases, or 75 per cent.

Manual Removal of the Placenta.—It is difficult, by statistics, to show with much accuracy the frequency with which manual removal of the placenta was followed by septic infection, because in many cases the relative importance of this factor was complicated by the performance of other manipulations or operations. The placenta was removed manually in 34 cases—21 non-fatal and 13 fatal. Among the non-fatal cases the placenta was removed manually in 16 cases after spontaneous labour. In one of these the cervix had been torn, in one there was a sloughing perineal tear, in one case there was albuminuria, and in one case there was "latent gonorrhoea." In several cases there had been post-partum haemorrhage of varying degree and in some the placenta was not removed until several hours after the birth of the child. . . .

Among the fatal cases the placenta was removed manually, without other operation, in seven cases, in one of which post-partum haemorrhage is recorded. One of the spontaneous cases was followed by gangrene of the vaginal wall and uterus.

"Contact" Cases.—Direct transference of infection from one patient to another, which formerly bulked so largely as the cause of puerperal fever, was directly observed and traced in 15 cases, and in one other case the evidence was doubtful. Contagion, therefore, accounts for an incidence of 6 per cent. in the whole series. The first series of contacts is of sufficient interest to report in full:

The Infecting Case.

Mrs. M. O'C. came into labour with pyrexia already developed, with a pleural effusion and superficial thrombosis of arms and legs. There were three rigors. Labour was normal and no examination was made. This patient recovered.

The Infected Cases.

1. Normal labour, no streptococcus found in the blood—recovery.

2. Normal labour, one rigor, no streptococcus found in the blood—recovery.

3. Indirect contact with Mrs. M. O'C. for twenty-four hours. Normal labour. Haemolytic streptococcus, no rigors, general peritonitis—died seventh day.

4. Indirect contact. Caesarean section. Blood culture yielded haemolytic streptococcus. No rigors. Died on the eighty-fourth day.

5. Normal labour. Haemolytic streptococcus. No rigors, general peritonitis—died on the thirteenth day of puerperium.

6. Easy normal labour, simple laceration of perineum, blood negative, no rigors, general peritonitis—died eleventh day of puerperium.

The comment made by the obstetrician reporting this series is as follows:

"All the above developed close together, having been confined with Mrs. M. O'C., who had ante-partum pyrexia. Not strictly isolated, but no connexion between nurses examining the cases could be found, and no examination was at any time made on Mrs. M. O'C. But there was a certain amount of common mixing during the actual labours of the six secondary cases, extending over periods of from twelve to twenty-four hours, after which these cases were removed to separate wards."

This series, with its enlightening commentary, serves to show how subtle may be the means of infection by contagion. The infecting woman was never examined vaginally, yet her mere presence within the radius of the ordinary traffic of the wards was sufficient to disseminate serious and fatal infection. [Details of the other series are omitted here.] In spite of the commonly accepted view that secondary cases are usually of fulminating severity, of the 15 cases of contact infection only 5 died, a mortality of 33 per cent., as compared with 36 per cent. for the whole series.

Autogenous Infection.—The important question of the frequency and danger of autogenous infection as a cause of puerperal sepsis cannot, unfortunately, be elucidated by this inquiry. Any opinions on the etiological possibilities of this form of infection must rest upon evidence specially collected *ad hoc*, and such evidence can only be obtained by detailed investigation of women before labour, coupled with observation of the puerperium afterwards. The data supplied to us in this series of cases give the occurrence of septic foci in the body as possible causes of puerperal sepsis in only 5 cases, in none of which was there any identification of the focal organism with the causative agent of the puerperal infection. It is possible, if not probable, that some of the cases recorded in this report as arising after prolonged and exhausting labour or haemorrhage may have developed puerperal fever by reason of the diminished resistance of the patient failing to hold in check organisms which had been long resident in her body. In spite of the absence of serious consideration of autogenous infection in this report, we wish, however, to suggest that some exact work to clear up this question is urgently needed, for until it is definitely known what proportion of cases can be ascribed to autogenous infection our ideas of the correct prophylaxis of puerperal sepsis cannot be complete. Of this series of 249 cases, 5 only were reported as being suspected of autogenous infection. They are as follows:—*Recovered:* Gonococci in the cervix and normal labour—3 cases; cervical discharge with precipitate labour, and no examination made—1 case. *Died:* Calculous pyelitis and induction—1 case. The urine of this patient contained a streptococcus which was later identified by sugar reactions with the organism recovered from the blood and uterine cavity.

Haemorrhage in Labour.—The generally accepted view that haemorrhage in labour plays a serious part in the etiology of puerperal sepsis directly by lowering resistance, and indirectly by involving the patient in manipulative treatment, is borne out by the results of this inquiry. Of the whole series, 20 patients are notified as having had haemorrhage, either before or after labour, to a pathological degree. [The analysis is omitted here.] Considering all cases of haemorrhage we find that of 20 cases 13 died, yielding a mortality of 65 per cent., while the incidence of haemorrhage as an etiological factor in the whole series stands at about 8 per cent.

Albuminuria.—The presence of albuminuria was noted in 14 cases, but in most of them there was no account of the amount of albumin or the coexistence of other signs of toxaemia, which, if recorded, might furnish evidence as to how far the albuminuria was a real factor in the etiology or merely an incident. It is perhaps worth while recalling that out of 80 fatal cases of eclampsia reported by the Committee on Obstetrics and Gynaecology of the Royal Society of Medicine, only one death was directly attributable to sepsis—namely, general peritonitis. [The analysis of the patients is omitted here.] It is clear on examining the fatal cases that 3 of the 5 were complicated by other factors (such as haemorrhage and trauma) which were in themselves not only liable to predispose to sepsis, but also

likely to lead to fatal issue. Of the patients who recovered, 6 out of 9 were notified as having albuminuria only—that is, without any other of the conditions which ordinarily predispose to sepsis. From the comparatively few cases at our disposal we may perhaps conclude, therefore, that albuminuria does not play a great part in the causation of puerperal sepsis by lowering resistance, and that where albuminuria is the only condition present the chances of recovery, other things being equal, are good.

Exploration of the Uterus during the Puerperium, with or without Curetting.—We had hoped that this investigation might give some definite information about the risk attached to exploration of the uterus in cases of puerperal pyrexia. Unfortunately, however, the notes are in most cases too meagre to be of much value from this point of view, as they do not state the nature of the exploration—that is, whether a retained portion of placenta was removed or not, and whether the uterus was curetted or not. Exploration of the uterus is recorded in 15 cases, of which 12 were fatal. [Details are omitted here.] These figures are small, but it is worthy of note that 80 per cent. of the cases in which the uterus was explored were fatal. The operation, so far from doing good, probably did harm in some of them. We were agreeably surprised to find that exploration had been carried out in such a small number, as we had learned to regard it as a very dangerous procedure. It is interesting to note that retention of a portion of placenta played such a small part in the etiology of the recorded cases.

Induction of Labour.—Among the 247 cases labour was induced in 9; 3 of the patients recovered and 6 died. The fatal cases were: (1) albuminuria, bougies, secondary post-partum haemorrhage; (2) albuminuria; (3) albuminuria, post-partum haemorrhage; (4) chorea; (5) Champetier de Ribes's bag, manual removal of the placenta; (6) autogenous infection.

Clinical Features.

The following table indicates the onset of pyrexia in 230 cases. It shows the day on which the pyrexia started in cases in which recovery took place and in which death occurred. (0 = the day on which the labour finished.)

Day.	Recovered.	Died.	Day.	Recovered.	Died.
0	4	4	7th	5	2
1st	7	13	8th	5	2
2nd	25	14	9th	1	0
3rd	37	22	10th	7	1
4th	32	17	12th	3	—
5th	11	4	13th	1	—
6th	8	3	16th	0	2

It will be seen that in 25 per cent. the onset was on the third day; in 20 per cent. on the fourth day. In 83 per cent. the onset was in the first five days.

The next table shows the *percentage* of cases in which the onset occurred on each of the first seven days.

Day.	Recovered.	Died.	Day.	Recovered.	Died.
0	3	5	4th	22	20
1st	5	15	5th	8	5
2nd	17	17	6th	5	4
3rd	25	26			

It will be seen that, except on the day after delivery, there is very little difference between the percentages of non-fatal and fatal cases.

Degree and Character of the Pyrexia.—In 107 cases the pyrexia was said to be remittent; among these cases there were 73 recoveries and 34 deaths. In 61 cases the pyrexia was said to be persistent; among these cases there were 34 recoveries and 27 deaths. Reduced to percentages there were 68 per cent. of recoveries and 32 per cent. of deaths with remittent pyrexia; there were 56 per cent. of recoveries and 44 per cent. of deaths with persistent pyrexia. In 56 per cent. of the fatal cases there was a remittent type of pyrexia, and in 44 per cent. a persistent type. An analysis of the degree of pyrexia resulted in the finding that in cases in which recovery took place the average highest temperature was 103.3° F., and that in fatal cases 103.2° F. The degree of pyrexia is apparently of little prognostic value. A study of charts would be much more likely to provide useful information than a mere record of the character of the pyrexia and of its highest point.

Pulse Rate.—With a pulse rate under 140 per minute the fatal cases were 29 out of 132, or 22 per cent. With a pulse rate of 140 or over the fatal cases were 52 out of 94, or 55 per cent.

With a pulse rate of 110 and under,	96% recovered,	4%	died.
" " 120	79% "	21%	"
" " 130	60% "	40%	"
" " 140	58% "	42%	"
" " 150	29% "	71%	"
" " 160	17% "	83%	"

The above figures are very striking, and suggest that the frequency of the pulse is of great importance from the point of view of prognosis.

Rigors.—In 205 cases there was a definite note as to presence or absence of rigors. In 118 of these cases (58 per cent.) the presence of rigors was noted; in 87 cases (42 per cent.) the absence of rigors was noted. Of the 118 cases with rigors 78, or 66 per cent., recovered, while 40, or 34 per cent., died. Of the 87 cases without rigors 52, or 60 per cent., recovered, while 35, or 40 per cent., died. The mortality in the cases with one rigor was 36 per cent.; in the cases with two rigors 13 per cent.; in the cases with frequent rigors 38 per cent.; in the cases with no rigors 40 per cent. Most, if not all, of the patients were being looked after by trained nurses. Where the patient or an inexperienced nurse might not consider that a rigor had occurred unless the bed had been shaken and the teeth had chattered, an experienced nurse would notice the altered appearance of the patient with a complaint of a feeling of chilliness, or of "cold water running down the spine," with perhaps only a slight degree of shivering, would take the temperature and find a temporary rise to 104° F., 105° F., or higher. We must take it that in the 87 cases in which "no rigors" was recorded rigors did not occur, though it is possible that in the records in which a dash was put in the column for rigors they may have occurred, but this element of doubt does not affect the fact that in 35 fatal cases there were no rigors. The presence or absence of rigors cannot be taken as an important prognostic sign. [Tables showing the day of puerperium and the day of pyrexial period on which the first rigor occurred are omitted here.] The first rigor occurred in 8 per cent. of the total cases on the first day after labour, in 17 per cent. on the second, in 27 per cent. on the third, and 9 per cent. on the fourth; in 8 per cent. of the non-fatal cases on the first day after labour, in 15 per cent. on the second, 13 per cent. on the third, and 9 per cent. on the fourth; in 7 per cent. of the fatal cases on the first day after labour, 23 per cent. on the second, 17 per cent. on the third, and 7 per cent. on the fourth. The only useful fact shown by the above is that in fatal cases the rigors tended to occur early in the puerperium. In 67 per cent. of the total cases the first rigor occurred on the first day of the pyrexial period; in 71 per cent. of the non-fatal cases the first rigor occurred on the first day of the pyrexial period; in 62 per cent. of the fatal cases the first rigor occurred on the first day of the pyrexial period.

Sleep.—Owing to a change in the headings we were not supplied with information as to the character of the patients' sleep after the first groups of forms had been returned, except that insomnia was noted. In 111 cases the character of the sleep is noted, good or fair in 72, bad, poor, or "insomnia" in 49. In cases in which the patient slept well the mortality was 19 per cent.; in cases in which the patient slept badly the mortality was 75 per cent. In 16 cases in which insomnia was noted the mortality was 81 per cent.

Tongue.—Dryness of the tongue, according to most of the reports, seems to be of grave prognostic significance, but in a few of the forms sent in most of the patients who recovered were said to have dry tongues. Probably the dryness of the tongue in these cases was noted only on admission, before the patients had come under the care of skilled nurses. Dry tongue was noted in 72 cases, of which 33, or 46 per cent., were fatal.

Other Symptoms.—Vomiting was noted in only 4 cases, all fatal. Diarrhoea was noted in 20 cases, in 17 of which, or 85 per cent., the patient died. Delirium was noted in 30 cases, in 26 of which, or 87 per cent., the patient died. General peritonitis was noted in 16 cases, 15 of which, or 94 per cent., were fatal. Pneumonia was noted in 11 cases, of which 8, or 73 per cent., were fatal. Mania was noted in 5 cases, of which 3 were fatal.

Pyaemic Abscesses were noted in 13 cases during life, 6 of which, or 46 per cent., were fatal. In 5 cases, all of which recovered, abscesses developed in the buttock, at the site of quinine injections. This bears out the teaching that the formation of a fixation abscess indicates a rising resistance, and is of good prognostic significance. In one hospital, where several hundred quinine injections have been given, no abscesses developed except in one case in which an injection of ergotin before admission was thought to be responsible.

Results of Examination of the Blood.

In 53 cases streptococci were found in the blood; in 4 *B. coli* was found in the blood; in 79 the blood was said to be sterile. It would probably be more correct, in some of these cases, to say that streptococci were not found than that the blood was sterile, since in some of the positive cases streptococci were not found on the first or second examination, but were found later. Of the 79 negative cases 16, or 20 per cent., died, and 63, or 80 per cent., recovered.

Of the 53 cases in which streptococci were found 35, or 66 per cent., died; 18, or 34 per cent., recovered. It will be seen that the mortality was more than three times as great when streptococci were found in the blood as when they were not found. [Detailed analyses of the 53 cases in which streptococci were found in the blood are omitted here.] Among these cases there were 20, or 38 per cent., in which there were no rigors. Sixteen of these cases were fatal and 4 non-fatal—that is, 80 per cent. of the "blood positive" cases without rigors were fatal and 20 per cent. non-fatal.

Of the 4 cases in which *B. coli* was found in the blood, 3 cases recovered, with one, two, and three rigors respectively; pulse 110, 140, 172. There was one spontaneous labour. In one case the vagina and lower uterine segment were packed to induce labour. In one case delivery was by forceps. One patient died—eight rigors, pulse 140, placenta praevia, bipolar version, manual removal of placenta, bronchopneumonia.

Treatment.

We had hoped to make some useful deductions on the subject of treatment, but have been unable to do so. There were over sixty different methods of treatment or combinations of different methods. In the first 31 cases analysed, in which the treatment consisted of "general medical treatment," there were 25 recoveries and 6 deaths, but it would be absurd to deduce from this that treatment of puerperal sepsis by general medical measures results in nearly 81 per cent. of cures!

In 33 cases treated by antistreptococcic serum and injections of quinine there were 28 recoveries and 5 deaths—a mortality of 18 per cent.—while 11 patients treated by intramuscular injections of quinine alone all recovered. Of 14 patients treated with antidiphtheritic serum only 1 died, while 3 patients treated by collosol iodine and neosalvarsan all died. It should be stated that some of the cases mentioned above in which recovery took place were afterwards discarded as not being sufficiently severe to come into this report, but the labour which would be involved in getting out corrected figures did not seem to be worth while.

The various methods of treatment adopted, alone or usually in combination with one or more others, included general medical, postural, douching, antistreptococcic serum, vaccines (stock and autogenous), collosol iodine, collosol argentum, transfusion of blood, immunotransfusion, saline solution or sodium bicarbonate solution per rectum and intravenously, quinine intramuscularly and intravenously, phylacogen, antidiphtheritic serum, *B. coli* serum, eusol intravenously, irrigation of the uterine cavity with methyl violet and crystal green, and intravenous injections of mercurosol and mercury perchloride.

This long list suggests that the best method of treatment is still being sought. Would it be possible to parcel out various definite methods of treatment to selected hospitals so that results could be compared in a year's time, or are the conditions too diverse to be feasible?

Duration of Life in Fatal Cases after the Onset of Pyrexia.

In 83 cases the average duration of life after the onset of pyrexia was eighteen days, but this average was made unduly high by inclusion of a few cases which dragged on for weeks or months. The most fatal day was the eighth, on which 8 patients, or 10 per cent. of the total, died. On the fourth and fifth days together 14 patients, or 17 per cent., died.

Thirty-one patients, or 37 per cent., died in the first week.
Seventeen patients, or 20 per cent., died in the second week—that is, 57 per cent. in the first two weeks.
Ten patients, or 12 per cent., died in the third week—that is, 69 per cent. in the first three weeks.
Ten patients, or 12 per cent., died in the fourth week—that is, 81 per cent. in the first four weeks
Eight patients, or 10 per cent., died in the fifth week—that is, 91 per cent. in the first five weeks
One patient died on the 38th day
Three patients died between the 50th and 60th days.
One patient died between the 60th and 70th days.
One patient died between the 80th and 90th days.
One patient died on the 180th day.
(Some of these patients died of marasmus, the effect of adhesions due to intraperitoneal suppuration.)

Excluding these last seven cases, the average duration of life of the remaining 76 patients was fourteen days after the onset of pyrexia, and 63 per cent. of them died in the first two weeks.

Post-mortem Findings.

The following is a summary of the *post-mortem* findings in 35 fatal cases, with the number of days of duration of life after onset of pyrexia.

General peritonitis, six cases, 4, 4, 7, 7, 9, and 17 days.
Abdomen full of pus, no gross lesions of organs, 4 days.
Free pus in abdomen, 35 days
Abdomen full of pus, 7 days.
Multiple abscesses in kidney, 9 days.
Double pyosalpinx, 56 days.
Pneumonia, enlarged spleen with abscesses, 52 days.
Nothing remarkable in pelvis, a little blood-stained free fluid, spleen enlarged and almost fluid, 11 days.
Gangrene of vaginal wall and uterus, 10 days.
Endometritis, septic spleen, general peritonitis, 2 days.
Acute vegetative endocarditis, *nil* else, 66 days.
Pericarditis, abscesses of kidney, endometritis, 14 days.
Putrid endometritis, necrotic. Tubes infected. Peritoneum healthy, 3 days.
Putrid endometritis, necrotic. Tubes infected. Peritoneum healthy, 3 days, no pyrexia.
Abscesses in hand, shoulder, ankle, and eye, and multiple in uterus and parametrium, 25 days.
Putrid endometrium, 2 days. Albumin.
Nothing remarkable, 8 hours.
Gangrene of uterus, necrotic pus in parametrium, double pyothorax, multiple abscesses in lung, 18 days.
General peritonitis, infection from Fallopian tube, 4 days.
Abdomen full of pus, right tube infected, right lung partly consolidated, 10 days.
General peritonitis, no local lesion, 3 days.
No peritonitis, uterus large and soft and pulpy, internal surface oozing pus, small tear anterior surface sealed by adhesions, internal version, impacted shoulder, 8 days.
General peritonitis, cystitis, and parametritis, 4 days.
Gas-forming organisms in uterus, liver, and large blood vessels.
Purulent general peritonitis and parametritis, 4 days.
Acute endocarditis, thrombosis of ovarian vein, 7 days.
Uterus full of pus, multiple abscesses in uterine wall, septic embolism in lungs, 24 days
Anterior parametritis, uterus lined by septic granulation tissue, 27 days.
Infected placental site, left veins, abscess left ovary, 7 days.
Sloughing of genital tract and buttock, 7 days.

[The report concludes with a series of brief notes of some serious cases (nine in number) in which the patients recovered. These cases serve to illustrate (1) the old maxim, "never give up hope in a septic case," and (2) some of the diverse methods of treatment adopted.]

SUMMARY OF PROGNOSIS.

To sum up, this analysis suggests that the following should be considered to be of grave significance:

1. Onset of pyrexia during labour or within twenty-four hours of its termination.
2. Extensive tissue damage in the labour, particularly tearing of vagina and cervix rather than of perineum only.
3. Presence of streptococci in the blood.
4. Persistently high pulse rate.
5. Insomnia.
6. Diarrhoea with or without general peritonitis.
7. General peritonitis, pneumonia, or delirium.

The following signs and symptoms are of good prognostic significance:

1. Absence of streptococci in the blood.
2. Moderately low pulse rate, about 120.
3. Freedom from insomnia and diarrhoea.

NORTH OF ENGLAND COMMITTEE'S REPORT.

THE report of a committee of the North of England Obstetrical and Gynaecological Society on puerperal blood infections was presented to the Congress on April 22nd. The Committee was appointed in January, 1924, and consisted of Professor W. Blair Bell (Chairman), Mr. John Chisholm, Dr. Daniel Dougal (Secretary), Mr. Carlton Oldfield, and Mr. Leyland Robinson.

INTRODUCTION.

This report is based upon an analysis of 154 cases of puerperal septicaemia, selected in accordance with the qualifications laid down at the beginning of the investigation, and set forth on the special forms drawn up by the London Committee in conjunction with the Committee of the North of England Society. [The conditions are set out in the London Committee's report, at page 779.]

It will be apparent that only the most serious cases are taken into account, and in view of the high mortality rate in our series it is important that this should be fully understood at the outset.

The printed puerperal fever forms received from various sources have been carefully examined, and the information obtained has been analysed under the following headings: (1) Etiology; (2) Symptoms; (3) Pathology and Bacteriology—(*a*) pathological anatomy, (*b*) bacteriology; (4) Treatment—(*a*) intrauterine methods, (*b*) abdominal operations, (*c*) serological methods, (*d*) drugs, (*e*) other methods. The majority of the cases were treated in institutions, but a few came from private sources.

Nearly half of the cases—72 to be exact—were admitted to the Walton Institution of the West Derby Union, Liverpool, and the Committee wishes to record its appreciation of the work done by the medical officer, Dr. H. H. MacWilliam, in collecting so much valuable material and placing it at the disposal of the society.

ETIOLOGY.

In considering the question of etiology, account must be taken of the patient's general health and surroundings, the efficiency of the antiseptic precautions employed by the doctor or midwife in attendance, the character of the labour, and the nature of any obstetric operation performed. It is impossible to express any opinion on the first two points, for the data available are too scanty, but in regard to the others a good deal of useful information has been obtained.

In over 46 per cent. of the cases labour was normal—there was no interference whatever, apart from vaginal examinations. The number of these examinations is not known, except in a few cases specially mentioned in the table. Forceps were used in 29.2 per cent. of the cases, and the placenta was removed manually in 15.6 per cent. The latter figure is important, and shows that the risk of septic infection following manual removal of the placenta has not been exaggerated. There is one instance of infection after packing of the vagina, but the case—one of placenta praevia—was further complicated by the fact that there was a gonorrhoeal vaginal discharge.

The source of infection has next to be considered, and any conclusion which may be drawn is largely a matter of speculation. There are seven cases in which the patient had some infective condition prior to the onset of labour, and in these the infection may have been autogenous. In the majority of cases, however, it has to be assumed that the infection came from without, and was introduced during delivery. In five cases there is strong evidence to show that the nurse's hands were responsible—three were attended by the same nurse, one was attended by a nurse who had a bad reputation as regards asepsis and had two other deaths a short time previously, and in the remaining case the nurse was suffering from some feverish condition at the time she delivered the woman. Two cases were attended by a doctor suffering with a septic finger. The two cases in which the infection is supposed to have been conveyed from another patient are interesting. In one a patient in the next bed was found to be suffering with scarlatina; in the other, the woman's husband developed erysipelas of the face, and was transferred to a fever hospital. This misfortune so upset his wife that labour started prematurely, and the child was born before the arrival of either doctor or nurse. This patient developed septicaemia, in spite of the fact that everything was normal at the confinement and there was no vaginal examination.

One other point in connexion with etiology may be mentioned here, and that is the possibility of minor degrees of sepsis being converted into blood infections by intrauterine methods of treatment. If the first rigor be taken as an indication of the onset of blood infection, it is possible to examine 43 cases where sufficient data are available. In 13 cases the uterine treatment was carried out prior to the occurrence of the rigor, but in one of these the rigor which occurred was apparently due to the intrauterine method adopted for the administration of antistreptococcal serum. In four instances the rigor was definitely stated to have occurred immediately after the intrauterine treatment.

ETIOLOGICAL FACTORS.

Relation between Intrauterine Methods of Treatment for Sepsis and Onset of Septicaemia.

Serial No.	Day of Onset of Pyrexia.	Day of First Rigor.	Nature and Day of Intrauterine Treatment.	Result.
1	5	5	Curetting, 12th day	Died.
5	7	7	Douche, 11th day	Died.
*3	2	4	Exploration, 4th day	Died.
9	2–3	9	Douche, 5th day	Died.
19	2	2	Explored, 7th day	Died.
12	2–3	6	Explored, 7th day	Died.
14	2	2	Nil	Died.
*15	2	2	Douche, 2nd day	Died.
16	3	3	Explored, 10th day	Died.
*23	5?	5	Washed out, 5th day	Died.
24	1	9	Washed out, 2nd day	Died.
25	9	9	Douche, 31st day	Died.
27	3	5	Explored, 6th day	Died.
28	1	1	Explored, 8th day	Recovered.
29	3	3	Explored, 4th day	Died.
30	3	6 (serum)	Douche, 3rd day	Died.
*32	8?	8	Clots removed, 8th day	Died.
	3	3	Nil	Died.
35	3	3	Nil	Died.
38	3	3	Explored, 6th day	Died.
41	4	4	Nil	Died.
42	3	3	Explored, 7th day	Died.
43	4	4	Explored, 6th day	Died.
*44	1?	6	Explored, 4th day	Died.
46	4	7	Nil	Died.
47	10?	10	Douche, 18th day	Died.
48	2?	10	Nil	Died.
*49	4	13	Douche, 9th day	Died.
50	8?	8	Douche, 12th day	Died.
52	4	4	Douche, 6th day	Died.
55	2–3	4	Curetted, 6th day	Recovered.
57	5?	5	Curetted, 10th day	Recovered.
59	3	3	Nil	Recovered.
60	3	3	Douche, 5th day, explored 6th day	Recovered.
*64	4	14	Curetted, 4th day	Recovered.
*65	8?	10	Curetted, 10th day	Died.
107	4	4	Douche, 7th day	Died.
117	18?	18	Curetted, 19th day	Died.
*123	17	18	Removal of R.P.C., 17th day	Died.
*130	9	13	Removal of R.P.C., 13th day	Died.
132	4	2	Glycerin injected into uterus, 9th day	Died.
*138	1	1	Curetted and douched, 1st day	Died.
*143	8	11	Removal of R.P.C., 9th day	Died.
*150	3	5	Uterus douched, swabbed, and packed at delivery	Recovered.

NOTE.—An asterisk has been placed opposite those cases in which the first rigor occurred after intrauterine treatment.

Other etiological factors in this series of cases, which are tabulated in the Committee's report, are printed here in abstract.

Complications were reported in the following cases: Delayed head-first cases 43, transverse lies 3, haemorrhages—ante-partum (unclassified) 1, placenta praevia 7, post-partum 5, secondary post-partum 2.

Instrumental delivery took place in 45 cases, the placenta being removed manually in 6 of these. Version was performed in 8 cases, the placenta being removed manually in 3 of these.

Summary of obstetric operations in 154 cases of puerperal septicaemia: No obstetric operation 72 cases (46.7 per cent.), perineal suture only 14 cases (9 per cent.), forceps, etc., 45 cases (29.2 per cent.), version 8 cases (5.2 per cent.), manual removal of placenta only 15 cases (9.7 per cent.).

The only information as to vaginal examinations during delivery was as follows: Child born before arrival of doctor or nurse, no interference necessary, 1 case; child born before arrival of doctor or nurse, but perineum sutured, 1; no examinations before delivery, 3; one examination only, 2; one examination by doctor, 1.

Foetal conditions: Twins 3 cases, premature 9, foetus putrid or macerated 5.

Source of infection: Doubtful 71 cases; possibly conveyed by doctor 2, possibly by nurse 5, possibly from putrid foetus 2; injuries during delivery—extensive lacerations, 12; difficult forceps extraction 16, version 5, manual removal of placenta 16, packing uterus for post-partum haemorrhage 1; retained portions of placenta 15; associated infections—influenza 1, alveolar abscess 1, syphilis 3, gonorrhoea 2; from another patient—scarlatina 1, erysipelas 1.

SYMPTOMS.

The information obtained under this heading is of little value. The temperature rose on the second, third, or fourth day in 73.5 per cent. of the 121 cases about which particulars are available. The character of the pyrexia was very variable, but was remittent in a large proportion of cases. The accuracy of much of the information on the point is, however, very doubtful.

Rigors and Pyrexia.

The interval between the first rise of temperature and the occurrence of the first rigor is of interest, as giving some indication as to the rapidity of onset of the actual blood infection. Particulars on this point are available in 75 cases as follows (the first figure in each instance shows the interval in days, the second the number of cases): 0, 38; 1, 7; 2, 4; 3, 6; 4, 2; 5, 4; 6, 2; 7, 1; 8, 1; 9, 2; 10 and over, 8. It will be seen that the rigor occurred on the day of onset of pyrexia in more than half of the cases. Rigors occurred in 107 cases (74 per cent.), there were no rigors in 37 cases, and no information as to rigors in 10 cases. In 18 of the patients who died and in 6 of those who recovered there was only one rigor; in 9 and 4 respectively there were two rigors; in 9 and 2 there were three; in 12 and 2 there were four; in 3 and 0 there were five; in 15 and 10 there were more than five; and in 16 and 5 the number was doubtful. In 7 of the patients who died and in 3 of those who recovered the first rigor was on the first day; in 10 and 3 it was on the second day; in 10 and 2 on the third; in 10 and 5 on the fourth; in 4 and 3 on the fifth; in 6 and 0 on the sixth; in 4 and 0 on the seventh; in 4 and 2 on the eighth; in 5 and 0 on the ninth; in 4 and 0 on the tenth; in 1 and 1 on the eleventh; in 1 and 0 on the twelfth; in 3 and 0 on the thirteenth; in 0 and 2 on the fourteenth; in 7 and 2 the first rigor was later than the fourteenth day.

In 13 of the patients who died and in 3 of those who recovered pyrexia began on the first day. In 20 and 5 respectively it began on the second day; in 29 and 12 on the third day; in 15 and 8 on the fourth day; in 10 and 1 between the fifth and ninth days. In 1 fatal case the onset of pyrexia was on the twelfth day; in 3 fatal cases on the thirteenth or fourteenth day; and in 1 fatal case between the fourteenth and twenty-first days. The day of onset was doubtful in 33 cases.

Vomiting occurred in 8 of the patients who died and in 3 of those who recovered; insomnia in 4 and 6 respectively; diarrhoea in 19 and 6; delirium in 29 and 5.

PATHOLOGY AND BACTERIOLOGY.

Post-mortem examinations were made in 49 cases, and the results are summarized as follows: No localized lesions, 12 cases; abdominal or pelvic conditions—peritonitis, etc., 23; thrombosis only, 11; pulmonary lesions only, 3.

The lesions observed are enumerated as follows:

Uterus—metritis and endometritis	6 cases
Peritoneum and pelvic cellular tissues—	
Free fluid in general peritoneal cavity (serous 7, blood-stained 3, turbid 3, purulent 8)	21 ,,
Pus in pouch of Douglas	4 ,,
Pus in broad ligament	3 ,,
Spleen—	
Diffluent	3 ,,
Infarcts	7 ,,
Circulatory System—	
Vegetations on mitral valve	3 ,,
Venous thrombosis:	
Ovarian	7 ,,
Ovarian and inferior vena cava	2 ,,
External iliac and femoral	3 ,,
Femoral and saphenous	1 ,,
Internal saphenous	1 ,,
Uterine wall	1 ,,
Broad ligament	1 ,,
Respiratory System—	
Pleurisy, with or without effusion	5 ,,
Empyema	2 ,,
Pulmonary congestion	3 ,,
Pulmonary consolidation (abscesses in 6 cases)	9 ,,
Miscellaneous—	
Pyaemic abscesses	6 ,,
Petechial haemorrhages in various organs ...	7 ,,
Staining of tissues with blood pigment ...	2 ,,
Rapid decomposition from gas-forming organism	1 ,,

Blood Cultures.

The blood was examined during life in 75 cases, and streptococci were grown in over 65 per cent. A great majority of these examinations were made in one institution, and the high percentage of positive results not only indicates a very efficient technique, but also demonstrates the serious character of the infections. The cultures were generally made soon after the patient's admission and, if negative, were repeated in the event of her progress proving unsatisfactory. The following table gives some details as to the date, number, and results of the blood examinations in twenty-two cases where the particulars are available. [The detailed bacteriological findings at *post-mortem* examination and during life are omitted here.]

Serial No.	Day of Onset of Pyrexia.	Day of First Rigor.	Day of Blood Culture, and Result.	If Fatal, Day of Death.
2	2nd	5th	8th, Positive	13th.
3	2nd	4th	4th, Positive	7th.
5	7th	7th	12th, Positive	17th.
8	?	Nil	28th, Positive	35th.
9	2nd or 3rd	9th	8th, Positive	17th.
11	?	12th	15th, Positive	34th.
12	2nd or 3rd	6th	7th, Negative	14th.
18	?	Nil	13th, Positive 9th, Negative	34th.
19	4th	4th	12th, Negative 24th, Positive	Recovered.
25	9th	9th	11th, Positive	60th.
29	3rd	3rd	4th, Positive	8th.
34	3rd	3rd	7th, Positive	14th.
35	3rd	3rd	3rd, Negative 24th, Positive	26th.
59	3rd	3rd	11th, Negative 14th, Negative	Recovered.
102	2nd	2nd	9th, Positive	Recovered.
107	4th	4th	17th, Positive	25th.
114	4th	7th	6th, Positive	14th.
115	3rd	3rd	14th, Positive	31st.
116	3rd	Nil	8th, Positive	9th.
118	2nd	Nil	12th, Positive	13th.
119	2nd	Nil	6th, Positive	7th.
120	?	Nil	7th, Positive	7th or 8th.

TREATMENT.

In investigating the results of treatment, the Committee has been faced with the difficulty that a variety of different methods have been employed in almost every case, and it feels that it is quite impossible to express a definite opinion as to the efficacy of any particular method.

Some attempt has been made to group the various lines of treatment and examine the results, but the mortality in all is uniformly high, and there seems to be very little to choose between them.

Methods Employed, with the Exception of Drugs.

Intrauterine treatment alone was employed in 18 cases; intrauterine treatment and abdominal operation in 5; intrauterine and serological treatment in 21; intrauterine treatment and drainage of abscesses in 5; intrauterine and serological treatment, and drainage of abscesses in 8; intrauterine treatment, abdominal operation, and drainage of abscesses in 7; intrauterine and serological treatment

with abdominal operation and drainage of abscesses in 2. Abdominal operation alone was employed in 4 cases, and combined with serological treatment in 10; serological treatment alone in 49, and combined with drainage of abscess in 5; drainage of abscesses alone in 4 cases.

Operative Procedures.

Intrauterine methods were employed in 42 per cent. of all cases. They consisted of curetting, with or without douching, in 3 fatal and in 2 non-fatal cases; curetting, with drainage, in 5 and 2 respectively; douching in 6 and 1; douching, with drainage, in 7 and 2; swabbing in 1 and 3; exploration, with or without douching or swabbing, in 17 and 2; exploration, with drainage, in 13 and 2.

Vaginal operation (drainage of the pelvis through posterior fornix) was employed in 14 fatal and in 6 non-fatal cases.

Abdominal Operations.—Of these, 21 were performed on fatal cases and 9 on non-fatal cases. The mortality after abdominal operations was 70 per cent. The operations were as follows: Drainage of abdomen in 8 fatal and 3 non-fatal cases, ligature of thrombosed veins in 9 and 2 respectively, ligature of thrombosed veins with removal of one or both appendages in 3 and 1, ligature of thrombosed veins with removal of uterus and appendages in 1 non-fatal case. The mortality after operations for pelvic thrombosis was 75 per cent. Appendage removed for salpingitis in 1 fatal case and 2 non-fatal cases.

Serological Treatment.

Antistreptococcal serum was administered in 101 cases. As regards dosage, 50 c.cm. or less was given in 13 fatal cases and in 1 non-fatal case; 50-100 c.cm. in 8 and 6 respectively; 100-150 c.cm. in 3 and 3; 150-200 c.cm. in 2 and 4; over 200 c.cm. in 20 and 3. In 37 cases the amount is not known. The largest dose was 1,050 c.cm., in a fatal case.

Antigonococcal serum was administered in 1 fatal case.

Vaccines were administered in 13 cases in all. Mixed streptococcal vaccine in 3 fatal and in 3 non-fatal cases; autogenous in 1 and 4 respectively; in 4 fatal cases and 1 non-fatal case the nature of the vaccine was not stated; streptococcal and staphylococcal vaccine was given in 1 non-fatal case, and *B. coli* vaccine in 1 fatal and 1 non-fatal case.

Drugs.

The principal drugs employed were quinine (administered in 15 fatal and 7 non-fatal cases), collosol manganese (in 3 and 3 respectively), and coagulen ciba (in 9 and 2). The following drugs were also used: collosol argentum, collargol, novarsenobillon, ergot, acriflavine, chloramine, calcium chloride, iron, strychnine, digitalis, ammonium carbonate, calomel, infundibulin, adrenaline, parathyroid.

Other methods of treatment, employed in a few cases, were fixation abscess, drainage of pleural cavity, opening of pyaemic abscesses, blood transfusion, and vaginal tampons and packs.

Summary of Results of Treatment.

1. Intrauterine methods with or without other operative procedures: Total cases, 66; mortality, 78.7 per cent. Intrauterine methods, no other operative procedure: Total cases, 41; mortality, 80 per cent.

2. Abdominal operations with or without other operative procedures: Total cases, 30; mortality, 70 per cent. Abdominal operations, no other operative procedure: Total cases, 14; mortality, 71.4 per cent.

3. Serological treatment with or without other operative procedures: Total cases, 104; mortality, 72 per cent. Serological treatment, no operations: Total cases, 47; mortality, 76.5 per cent.

PERIOD OF SURVIVAL.

The number of days patients lived after the onset of pyrexia (in 100 cases) is shown in a concluding table.

Two patients survived 3 days, one survived 4 days, seven survived 5 days, nine survived 6 days, and four survived 7 days; 23 per cent. died within a week of onset of pyrexia. Five patients survived 8 days, eight survived 9 days, six survived 10 days, five survived 11 days, three survived 12 days, four survived 13 days, and two survived 14 days; 33 per cent. died within a fortnight of the onset of pyrexia. Six patients survived 15 days, three survived 16 days, one survived 17 days, two survived 18 days, one survived 20 days, and 31 survived over three weeks.

It will be noticed that 23 per cent. of cases died within a week, and 31 per cent. survived three weeks or longer. Of cases in the latter group, about 50 per cent. had definite thrombo-phlebitis.

RESULTS.

The general mortality rate in the series of 154 cases is 76 per cent. This is a very high percentage, but it has to be remembered that the report deals only with cases of puerperal blood infection, and that fatal cases have been included, irrespective of *ante-mortem* symptoms.

Reports of Societies.

ENCEPHALITIS LETHARGICA.

AT a meeting of the Manchester Medical Society on April 1st, the President, Professor G. R. MURRAY, in the chair, Dr. D. E. CORE opened a discussion on encephalitis lethargica.

Dr. Core first described a typical case of average severity in a young man of 24, and then dealt with certain symptoms and sequelae in detail. As regards the diagnosis of encephalitis lethargica, it was important to remember that no particular symptoms were essential; often enough the condition escaped recognition as an illness by the patient and his friends, and might only be revealed as such in the light of the after-course. The view that it was possible to establish a diagnostic scheme based upon symptoms was, he believed, untenable, and the present tendency to do so was responsible for the many erroneous diagnoses. Apart, however, from objective signs of implication of the nervous system, he had been increasingly impressed by the interesting relation existing between the symptoms and the patient's consciousness. In normal life there was a reasonably close parallelism between objective behaviour and the personality of the individual; a man who was acting in an uncontrolled way usually showed signs of mental uncontrol, one who seemed to be profoundly unconscious was as a rule unconscious, and a delirious patient was generally not aware of his surroundings. In encephalitis lethargica, however, this association did not appear to obtain. The most restless and uncontrolled patient was quite often capable of giving a remarkably clear and logical account of his sensations without any evidence of psychical uncontrol. It was notorious that the patient somnolent to the point of coma was usually able to answer questions and to give information demanding considerable concentration; the same phenomenon was observable in delirious patients. Furthermore, the ability to memorize subsequently events occurring in their environment at such times was considerable. In other words, instead of the normal association between the psychical state and the somatic symptoms, there was a dissociation which was anatomical rather than psychical, and which, he thought, was the most characteristic feature of the disease. The same principle was at work in the frank emotional loss of control that was liable to affect children as an after-state, and in the somatic want of control in the young adult with symptomatic paralysis agitans. From the standpoint of diagnosis this dissociation was, in his opinion, of greater value than objective signs of cerebro-spinal implications.

Dr. W. ST. CLAIR MCCLURE said that encephalitis lethargica was an infectious disease spread by "carriers": the organism responsible was universally distributed, but, happily, the majority of people were immune to its attack. A chart had been prepared showing that all ages were liable to attack, but that the incidence was most heavy between the ages of 10 and 20 years. Males and females were about equally attacked, and there was no special preponderance of cases in any one particular occupation. Bad environment appeared to predispose to an attack. In a series of 244 patients in 1924, 20 per cent. died; after twelve months 20 per cent. had apparently recovered, and 60 per cent. had residua of some kind, two-thirds of which were of a Parkinsonian character. Similar figures for 50 cases which occurred in Manchester in 1920 and 1921 were: mortality rate 56 per cent., recovery rate (three years after onset) 14 per cent., and incapacity rate 30 per cent. Taking into consideration wrong diagnoses and non-recognized cases, 15 to 20 per cent. probably represented the recovery rate, though it differed in different epidemics. The prognosis in any individual case was guesswork, but it was comforting to know that complete recovery was possible even in cases which at first appeared hopeless, and it was notable that some who did not recover were not, however, totally incapacitated. In many the disease process came to a standstill, and a useful and more or less happy existence was possible. Hiccup might occur as one of the symptoms of encephalitis lethargica, and be the one and only sign of the disease.

Epidemics of hiccup and encephalitis, however, did not as a rule run concurrently: in Manchester, in 1924, a hiccup epidemic preceded the encephalitis epidemic. In December, 1923, and January, 1924, there was a generalized epidemic of hiccup in the city. The attacks consisted of persistent hiccup lasting three to ten days, unaccompanied in the majority of cases by other symptoms, though some few patients exhibited drowsiness. The sufferers invariably recovered without sequelae, and an inquiry twelve months later had not so far resulted in the discovery of any post-encephalitic signs amongst them. In the investigation of cases of encephalitis lethargica special inquiry was made amongst 1,200 contacts for a history of hiccup, but only two were discovered. The households attacked by encephalitis lethargica were not those attacked by hiccup. Amongst the encephalitis lethargica patients hiccup was one of the symptoms in about 3 per cent. There was no evidence here favouring the view that the two diseases were associated, though such a possibility was not excluded. During the first three months of 1924 influenza of a mild type was said to be prevalent. It was not, however, until the middle of March, when the epidemic of encephalitis had subsided, that influenza of a severe type became evident. Special inquiry amongst contacts showed that it was the exception for a case of influenza to have occurred amongst them (10 out of 1,207), nor did the patients themselves suffer from influenzal symptoms. Influenza, though said to be present, did not to any extent invade households attacked by encephalitis. Influenzal cases had not given rise to encephalitis lethargica, nor had cases of the latter disease given rise to influenza. A study of the epidemic waves of influenza and encephalitis in Manchester showed that there was no correlation in point of time between the two diseases and provided no evidence in support of the contention that they were associated in any way one with the other.

Professor J. H. DIBLE, speaking from the pathological side, was in full agreement with the previous speakers as to the difficulties in clinical diagnosis. The first three cases in which he performed autopsies turned out to be tuberculous meningitis. He wished to draw the attention of the society to the experimental pathology of the disease. At the onset of its epidemic phase analogy with poliomyelitis suggested that it might be transmitted to apes and investigated upon the line so successfully followed by Flexner and his associated workers in the latter disease. Early experiments, however, particularly of McIntosh and Turnbull in this country, had failed to infect these animals, and it was not until 1919 that Strauss, Hirschfeld, and Loewe reported successes from America. These workers then reported further successes with naso-pharyngeal washings and cerebro-spinal fluid as well as with brain material as the source of the infecting agent, and they claimed that the rabbit and not the monkey was the animal of choice for this work. Early in 1920 Levaditi and Harrier claimed to have transmitted the disease to rabbits, and about the same time McIntosh published an account of similar successful inoculation of monkeys in series, and from monkey to rabbit. The speaker himself had, since 1920, been attempting to convey the disease to the lower animals, and gave details of many attempts to transmit the infection to rabbits, using material derived from ten cases of the disease. These experiments invariably failed, whatever type of material was used as inoculum and by whatever route that inoculum was introduced. Attention was drawn to the existence of two schools—one claiming that production of the disease in animals was so possible as to be used as a diagnostic measure with the cerebro-spinal fluid, whilst the other school, of which Levaditi was the protagonist, claimed that the disease was definitely inoculable, but only with difficulty, and that success was rare. His own personal experience had been entirely negative. Recently Flexner, whose authority in this type of work was very great, had published the results of a very large series of attempts made in conjunction with Amos. All material from cases of encephalitis had failed to infect; a positive result was obtained in one instance, but this was with cerebro-spinal fluid from a case of cerebral syphilis and not of encephalitis. Such results called into question again the validity of all the published positive results. The matter was one of great difficulty and was complicated in many ways, one of the most confusing questions being the relation of the encephalitis produced in animals by certain workers to that which the herpetic virus of Grütner was capable of setting up. Much more work was required before the matter could be regarded as settled, but, in the opinion of the speaker, the claim to have transmitted the disease to animals was as yet unsubstantiated.

Dr. C. J. C. EARL agreed with the previous speakers as to the difficulty of diagnosis. Out of sixteen cases admitted as encephalitis lethargica under his care at Monsall Hospital, eleven were proved to be other conditions, including tuberculous meningitis, brain abscess, and brain tumour. Some of these cases could not be diagnosed on physical examination alone. He had seen the typical dissociation of which Dr. Core had spoken in a case of cerebral abscess situated in the region of the basal ganglia. One case admitted as mumps proved to be encephalitis with parotitis. In three out of five of the more acute cases admitted herpes labialis was present. In one of these cases the sister of the ward also developed herpes labialis, though without any nervous signs, and it was an interesting question whether she should be regarded as having suffered from the disease in a latent form or, on the other hand, having been immune to it. One of the acute cases had shown excitability to a marked degree. He mentioned one case of inversion of sleep rhythm in a child who was more intelligent and cunning during the night than in the daytime; he also wrote a much clearer hand at night.

TREATMENT BY ARTIFICIAL LIGHT.

AT a meeting of the Section of Electro-Therapeutics of the Royal Society of Medicine on April 17th, Dr. STANLEY MELVILLE presiding, three communications on artificial light sources in treatment were made. One was by Sir Henry Gauvain, on the organization and work of the light department in the surgical tuberculosis hospital at Alton; the second by Dr. G. Murray Levick, on the selection of apparatus for the production of "artificial sunlight" (a term which both he and Sir Henry Gauvain criticized on the ground that it was clumsy and misleading); and the third by Professor Sidney Russ and Dr. Peacock, a brief report on some experiments on ultra-violet radiation.

Sir HENRY GAUVAIN explained that by light treatment he meant treatment by light produced by artificial means in distinction from sunlight. Only since the end of the war had he been able to realize a cherished ambition to have a properly equipped light department at Alton. He had been long convinced of the value of sun treatment for surgical tuberculosis, and on the ground of that practical experience, rather than on the scientific principles of light therapy (which were not yet fully established), he found justification for a department in which artificial light sources were employed to supplement or take the place of sunlight. Light treatment was necessarily very expensive. The initial cost of the lamps was only the beginning of a considerable and constantly recurring expenditure. At Alton an admirable generating plant in charge of a highly skilled engineer was available, so that it was a comparatively simple matter to select a ward as near to the power house as possible in order to reduce the length of cable, and to dig a connecting trench in which two cables were laid. By the kindness of Dr. Axel Reyn, whose paper read at the British Medical Association meeting at Portsmouth in 1923 (JOURNAL, September 22nd, 1923, p. 499) was very useful in this connexion, he was permitted to study the methods employed at the Finsen Institute at Copenhagen. Dr. Reyn and his co-workers pinned their faith to the open carbon arc, both for the general light bath and for local treatment. Sir Henry Gauvain said that at Alton he decided not to limit the choice so rigidly; nevertheless he made this source the principal one, and, determining that his own department should be based on the exact technique of the Finsen Institute in this respect, he succeeded in getting the services for six months at Alton of one of Dr. Reyn's trained sisters in order that the nurses in his light department might be instructed in the Finsen method. The installation consisted of two 75-ampère carbon arc lamps, each capable of treating simultaneously eight ambulant patients and three recumbent patients. With regard to

the other sources employed, during recent years a good deal of attention had been given to short-wave or ultra-violet radiation, and the value of such radiation—in rickets particularly—had been demonstrated. Therefore he made provision for mercury-vapour lamp treatment in his department, as well as for treatment by the tungsten arc, the iron arc, and other methods. The short-wave rays had proved somewhat disappointing. They had little penetrating power, although great superficial necrotic action, and he thought it was very necessary to exercise caution in using them. Until more was known about their mode of action his whole instinct was to proceed very carefully indeed. In the entire work of the department constant and responsible supervision was very necessary, and for that reason the department was so arranged that everything was under the immediate observation of the sister in charge. Treatment went on ordinarily from 8 in the morning until 7 in the evening, after which every lens and compressor was cleaned and the installation got in order for the next day. For general light baths a treatment lasting two and a half hours, and given on alternate days, was sufficient. While this treatment was being given the heads of the patients were protected by adjustable asbestos shields, they were given water to drink, and at the conclusion the ambulant cases went away for a douche and the recumbent cases were thoroughly washed. By the use of compressors, which exsanguinated the part, much deeper penetration of the light was possible. He found it of great value to intermit the light baths after a certain period of treatment. In the treatment of surgical tuberculosis he regarded the Finsen method as the principal, and the other light methods as accessory. The mercury-vapour lamp and the tungsten arc were not so valuable in the general treatment of this condition as the carbon arcs, though they might prove useful to prepare the way for the latter, and they were certainly advantageous for local uses, as in the treatment of sinuses and discharging glands. The long-wave infra-red rays were of some value in local treatment also, though he was doubtful about the claims sometimes made on their behalf. He had also a 110-volt Kromayer lamp, which he employed for local treatment. He exhibited photographs of his various apparatus, including a tunnel arrangement for subjecting a limb or the whole body to concentrated light, and mentioned that he was now experimenting on the production of portable lamps designed for patients who were too ill to be brought into the department. He added that at Alton the light department had the great advantage of the exclusive services of a laboratory research worker.

Dr. MURRAY LEVICK said that he had come to rather different conclusions from Sir Henry Gauvain as to the relative value of different light sources. So far as the treatment of surgical tuberculosis was concerned, he deferred entirely to Sir Henry Gauvain's opinion, but he thought that the difference between his own conclusions and those of Sir Henry was due to the rather different type of case dealt with. In his own work at St. Thomas's he had had to do with rather older patients than those who came under Sir Henry Gauvain's care, and they were suffering more or less from general illness and debility. His own preference was for mercury-vapour lamps as against the open arc. He was convinced that any disfavour into which mercury-vapour lamps had fallen was chiefly due to the erroneous idea that it was the ultra-violet rays alone in sunlight that produced therapeutic effect, and therefore that the lamp must be employed by itself. He had found the greatest advantage in combining mercury-vapour lamps with long-ray lamps, and with this combination he had obtained much better results than with the open arc. Debilitated patients who had been treated unavailingly by the open arc had subsequently responded favourably to the mercury-vapour combination. The results obtained with this combination among debilitated, rickety, and tuberculous children were superior to those obtained with the open arc. Even during exposure the difference between the two arrangements was manifest. The staff all said that they felt enervated and listless while the open arc was in action, whereas with the mercury-vapour lamp the effect was refreshing and exhilarating. With the open arc also it was impossible to have the slightest draught in the room on account of the flickering. The mercury-vapour combination was valuable for its uniform intensity, and, moreover, was cheaper to use than the open arc. An efficient reflector was a very necessary adjunct to mercury-vapour work. It was true that the mercury-vapour combination required very skilful and experienced handling and exactness in administration, on account of the extreme intensity of exposure. He had just returned from a visit to the Finsen Institute, and while he was full of admiration for all he saw there he thought it a pity that the institute should confine itself entirely to the carbon arc method.

Dr. PEACOCK, in the name of Professor Russ and himself, gave an account of some experiments on ultra-violet radiation which went to substantiate the view that the fluorescence of the skin surface in the ultra-violet beam was an immediate protective phenomenon, and that pigmentation which came later was a sign of the failure of fluorescence to protect the structures. If pigmentation was aimed at as the standard in treatment it was tantamount to producing an effective action against the very source of the treatment employed. It was noticed that smearing with vaseline enabled the skin to withstand a much greater intensity of radiation from the mercury-vapour lamp.

Reviews.

MUIR'S "PATHOLOGY."

OF excellent textbooks on physiology we have quite a number, and the high position of physiology in this country is probably more the result of, than the reason for, that fact. Recently a distinguished physiologist expressed the opinion that the pick of medical students who had originally set out with the idea of practising medicine were netted for physiology, though he was willing to allow that some of those who escaped the net might develop and become pathologists!

Pathology has not been so well served hitherto in the matter of textbooks. Treatises for the fully fledged, exhaustive monographs for the expert to consult, and soulless descriptive catalogues of morbid anatomy, there have been in plenty; but no "clear account writ fair and broad" to attract the student to a subject which, after all, is the basis of medicine and surgery. We therefore gladly welcome Professor ROBERT MUIR'S *Text-Book of Pathology*.[1] Our foremost British pathologist, he has exceptional qualifications for the task: a long and intimate acquaintance with the various aspects of pathology, many years of experience as a teacher, with the ability to present the subject simply, and, above all, the rare gift of going straight to the heart of a problem. "Ordered selection" used to be the principle that governed the Glasgow school of artists, and the same words could be used to describe briefly the method adopted in this product of the Glasgow school of pathology. The subject-matter is certainly compressed—not, indeed, at the expense of lucidity or interest, though the reader feels that here and there a more extensive consideration of such special problems as he may be specially engaged upon might have been given. It is a testimonial to the book that we realize that the author has much in reserve, much more that he could have imparted, but that he has deliberately sacrificed this in order to preserve due balance.

The reader is presented with a sound and attractive view of the subject by a master who appreciates the fact that those whose interest is aroused will seek to learn more, and the awakening of the desire to learn more is the test of good teaching. The student is introduced first to the changes that result from disturbances of nutrition, the various tissue degenerations, and the disturbances of the circulation; these learned, the phenomena of inflammation, the reparative processes, infection, and immunity are unfolded in easy sequence. The chapter on tumours which follows may be taken as a good example of the characteristics of the book; the varieties and characters of each tumour are succinctly and lucidly expounded, and the

[1] *Text-Book of Pathology.* By Robert Muir, M.A., M.D., Sc.D., F.R.S., Professor of Pathology, University of Glasgow. London: Edward Arnold and Co. 1924. (Med. 8vo, pp. vii + 774; 433 figures. 35s. net.)

etiological factors and experimental observations are discussed judicially and with insight; nothing is omitted that is of prime consequence; the problems are stated calmly and speculations are entirely excluded.

It is difficult in this book to separate special from general pathology: the transition from the one to the other is gradual. The chapters on the circulatory system, the respiratory system, and the blood-forming system may be considered to partake of both characters. The abdominal organs, the nervous system, bones, muscles, reproductive organs, and endocrine glands are more definitely special pathology. Every chapter is well done, and the reading of each leaves us with the feeling that we have at least mastered the fundamentals, but we want to learn more.

Still, at the same time, we would not have this textbook enlarged. The student with the multiplicity of subjects for examinations before him, and generally with a modest purse, desires a reasonably priced book, readable, informative, and up to date, and the general practitioner and consultant seek an authoritative and well proportioned account of a subject which they have not always practical opportunities for investigating. To them Professor Muir's textbook will be welcome. As for the pathologist, teacher, or laboratory worker, the book will be a friendly companion. The illustrations are numerous and well chosen. Reading the publisher's prospectus a fear arose that photomicrographs would prove, as they generally do, disappointing in bringing out the salient features that are shown by good drawings, but the fears were groundless, for, with few exceptions, the illustrations are clear and demonstrative. Messrs. Arnold are to be congratulated on the excellent get-up of the book. There are a few unimportant typographical errors that may be corrected in the second edition, which is probably on the way, if it has not by this time actually arrived. It will be a matter for wonder if the *Text-Book of Pathology* does not run through as many editions as Muir and Ritchie's *Bacteriology*.

OPERATIVE SURGERY.

A NEW work, in two volumes, entitled *Modern Operative Surgery*,[2] by Mr. H. W. CARSON, has recently been published. The editor, who has himself written several excellent sections, has called to his aid a series of collaborators of such standing as must ensure a welcome for his book. The object, which was to provide a textbook well and truly describing the technique of modern operative surgery, appears to us to have been to a very considerable extent achieved. The work is uneven, as all such works must be, not necessarily because some of the labourers were not worthy of their hire, but because the things they had to do were not all equally exciting or fruitful. There are always sections which have to be covered—sections which no one particularly wants to do, because out of them it is difficult to strike fire. It is all very much like casting a play, one imagines; there are fat parts and thin parts. The editor has wisely ruled out multiple alternatives and obsolete methods, leaving us with a compact text.

The book opens with a section on anaesthetics by Dr. J. Blomfield, and this is followed by another on the conservative treatment of tuberculosis, by Sir Henry Gauvain, who describes the methods in use at Alton and Hayling Island.

General orthopaedics is dealt with by Mr. R. C. Elmslie, who also writes on tendon transplantation and on amputations. He has limited himself strictly to the operative side of the question, and these parts are very well done. Very clear accounts are given of a number of the more commonly used methods; the text is not burdened by a number of alternatives. Professor Hey Groves follows with an admirable exposition of the more mechanical methods of dealing with fractures, illustrated by figures from his well known book. The various nailing, plating, and grafting operations are made to look so easy that a good deal of disillusionment is in store for such readers as have hitherto had little experience.

Mr. A. J. Walton writes on spinal surgery, on abdominal ptosis and adhesions, and on the thyroid gland. The section on the treatment of ptosis will be read with considerable interest by all. A very useful summary of the results of the division of membranes shows that such measures alone are seldom adequate to produce a cure, but that if followed by a course of physiotherapy the majority of patients are restored to perfect health. It is very necessary that the surgeon should be a firm believer in these measures, otherwise he is not likely to be able to control his patients subsequently. Which is to say that it seems very possible that an operation (quite regardless of what was done) is the essential, and acts as a form of major suggestion. Mr. Walton thinks it doubtful whether caecum and stomach fixations are as satisfactory as is generally believed. We doubt whether they are, in point of fact, at all generally believed to be satisfactory. Certainly the majority of surgeons in the great centres of England employ them rarely. Mr. Walton's views on the treatment of intestinal stasis, and on the place of that disease as an entity, are lucidly and even brilliantly expressed. We trust that his large experience may help to discourage others.

Operations upon the nerves are described by Mr. Harry Platt. He introduces a considerable amount of anatomical, pathological, and clinical matter of the greatest importance, and all of it is well put. The descriptions of operative technique could not be bettered; this is in every way an admirable section.

When we are told that Mr. Sampson Handley has written part of this book it will not be hard to guess what part it is. His views are well known, and will here be found to be again expressed with that urbanity, clarity, and persuasiveness which mark all his written work. On this occasion he goes into considerable detail on the treatment of melanotic sarcoma and of late rodent ulcer in addition to his usual account of breast surgery. Both of these additions should stimulate interest very considerably, particularly in the case of the melanotic tumours. Mr. Handley thinks that the virulence of this disease is overestimated. One of his own patients was alive fifteen years after operation. We fear that there is some ground for his contention that few surgeons, if any, have tackled these growths in a sufficiently scientific spirit.

Another section which makes this book most valuable is Mr. Grey Turner's article on the surgery of the liver and its excreting apparatus. We venture to think that no more original presentation of the subject has been seen for years. It will appeal especially to surgeons in what we may call their middle period—to those who have had a considerable experience of these cases but who have not become absolutely crystallized. A valuable feature of each section throughout the book is the addition of a short piece on the results of the various methods described.

Mr. Carson has himself taken over the greater part of abdominal surgery. His contributions are competent and well illustrated. Sir Berkeley Moynihan has sent him an account of the operation of pylorectomy as performed by himself, and Mr. Ernest Miles performs a like service on the technique of abdomino-perineal removal of the rectum. Apart from these, Mr. Carson's own parts are very well written, and a wise discretion has been used in the choice of procedures to be described.

It is impossible to do more than indicate the contents of the book; it is well produced, print and illustrations being very clear, and covers the whole field of surgery, including the eye, nose, and ear, and gynaecology; it is a valuable addition to the surgeon's library.

A TEXTBOOK OF PEDIATRICS.

IN the third edition of his book, *The Practice of Pediatrics*,[3] Dr. KERLEY has received the assistance of Dr. GAYLORD W. GRAVES. The first edition appeared in 1914, and the book, if not yet of age, has at least passed the more dangerous years of childhood and has a reasonable expectation of growing up. The method of treatment is that commonly adopted in systematic textbooks of this subject; the early chapters deal with the special physiology and anatomy of

[2] *Modern Operative Surgery.* Edited by H. W. Carson, F.R.C.S.Eng. In two volumes. London and New York: Cassell and Co., Ltd. 1924. (Med. 8vo: Vol. I, pp. xiii + 784, 364 figures, 2 plates; Vol. II, pp. xi + 784, 370 figures, 4 plates. £3 3s. net the two volumes.)

[3] *The Practice of Pediatrics.* By C. G. Kerley and G. W. Graves. Third edition, revised and reset. Philadelphia and London: W. B. Saunders Company. 1924. (Roy. 8vo, pp. 922; 4 coloured plates, 152 figures. 45s. net.)

infancy and childhood, with dietetics, and with general hygiene, and the remainder of the book gives an account of disease in childhood under the usual division of systems.

The authors in this methodical way take the reader over the entire territory of their subject, over ground that is well known, and into the regions of the rare diseases. They present a great mass of miscellaneous information, but perhaps their most interesting chapters are those where they rely mainly on their own experience and are sparing of references to authorities and "the literature." The difficult subject of infant feeding is handled in this more personal way, and is expounded with conviction and common sense; in it there is enough and not too much of that "lore of nicely calculated less and more." A clear account is given of the use of unsweetened condensed milk supplemented by starch and sugar, which is recommended for feeble and dyspeptic infants, until, after a few months, raw milk meals are gradually introduced. The chapter on diseases of the stomach and intestines—a group which in America yields perhaps more varieties and clinical types than in this country—is also of special merit; it contains an interesting account of visceroptosis, including falling of the stomach, with good *x*-ray illustrations.

In other sections personal experience does not blend so well with the general stock of knowledge, and the presentation of the facts fails a little in interest and coherence. The illustrations, too, are not of a high standard, and the citation of clinical records is often too brief to be really helpful. As a whole, however, the book can be recommended as a trustworthy guide to the subject, and one that is written by able and experienced physicians.

A GUIDE TO GENERAL PRACTICE.

Consultations du Médecin-Praticien,[4] by Dr. FRED. BLANCHOD, is an unusual book. It is intended to be a guide to the treatment of ailments met with daily in general practice, and is based on an experience of fifteen years as a country doctor. In his introduction the author quotes the epigram attributed to Dr. Franck of Vienna: "When I was a young doctor I had a hundred remedies for a single disease, but now that I am old I have only one remedy for a hundred diseases." The routine of many years in general practice does not appear to have simplified Dr. Blanchod's outlook in such a way, for he remains equipped with an armamentarium full of resources, but purged of many academic weapons. He begins with some good advice on common and avoidable errors, and distinguishes two varieties of mistakes of which the practitioner may be guilty: the first are errors which he calls academic, and the second are such as put the patient's life in danger, of which the commonest is that the doctor does not make a diagnosis because he has no time to think. To give an example, he observes, a constipated baby is most frequently a hungry baby, and it must be given nourishment instead of a purge.

The different ailments which a general practitioner is likely to meet with are arranged in alphabetical order and discussed from the practical point of view. In the treatment of everyday complaints, such as colds in the head and indigestion, French practice differs more from English than in that of the hospital type of disease, and judging from this book it appears also to be more versatile. No doubt, therefore, rural practitioners in this country would often find it useful to consult a book like this.

DYSPEPSIA.

DR. SOLTAU FENWICK'S work on *Dyspepsia, its Varieties and Treatment*, makes a welcome reappearance after having been out of print for several years. The second edition[5] does not differ from the first in its scope and general arrangement, but a thorough revision has been carried out, and the chapter on displacements of the viscera has been rewritten. The book is broad-based on personal experience, and quotations from the literature are used with discretion and appropriateness, giving the impression that, while the author is deeply read in all that pertains to the subject, his individuality is never in danger.

After a preliminary chapter on the varieties of dyspepsia and their differential diagnosis, the several kinds are considered separately, a chapter being devoted to each. Thus abnormalities of secretion, failure of muscular power, inflammations, disturbance of the nervous mechanism, displacements, foreign bodies, infancy and old age, and disease of other organs, constitute the headings under which the subject is considered, and they embrace all the varieties of indigestion that any practitioner is ever likely to meet, and some, it is almost certain, he never will. In the latter category are the cases due to the presence of living creatures in the gastro-intestinal tract. Dr. Fenwick has collected a formidable array of well authenticated cases in which lizards, frogs, tritons, slugs, caterpillars, worms, leeches, beetles, maggots, larvae, or chrysalides were responsible for intractable dyspepsia. Nevertheless, although more or less a clinical curiosity, such a cause of intestinal trouble cannot be wholly ignored. It is not, however, by its inclusion of the out of the way that the book claims attention, but by its wide everyday applicability; and it is a tribute to the author's accuracy of observation and lucidity of expression to say that it is easy to recognize the types that he describes, and to translate the book into actual practice. Dr. Fenwick is above the influence of fashion in treatment. He utters a note of warning against the indiscriminate removal of teeth in dyspeptic cases, and points out that, though oral sepsis may give rise to gastritis, just as suppuration anywhere in the body may produce the disease, the effect is not generally due to the direct swallowing of pus from the gums. He emphasizes the importance of not allowing the condition of the teeth to deflect or defer a search for other causes for the dyspepsia.

There is a suggestive section on the chronic gastro-enteritis of infants. The inflammatory nature of the disease is demonstrated by sections showing round-celled infiltration between the glands of the mucous membrane of the stomach and intestine, which may subsequently organize and produce atrophy of the glands and cirrhosis of the mucous membrane, and attention is drawn to the far-reaching effect of this process. "It is not generally understood that the gastric disease contracted, and apparently cured, in infancy is capable of exerting a deleterious influence upon the functions of digestion in adult life." Ample evidence is produced to support this obviously important statement.

As a whole the book is exceedingly well written in a fluent style which engages the mind, and in this respect might well serve as a model; to read it is to find a source of pleasure and much profit.

THE ANALYSIS OF OILS.

THE fifth edition of *Allen's Commercial Organic Analysis*,[6] Vol. II, treating of fixed oils, fats, and the like, has made its appearance. This volume does not differ notably from the plan of its predecessor in the last edition. It contains descriptions of all the fatty materials, the rare as well as the more familiar, which are known to published literature. Descriptions of the rare materials are properly limited to recorded observations of characters and the result of analytical or test reactions; commoner articles receive more detailed notice according to their importance. Descriptions of the latter include information of the occurrence, geographical source, and mode of preparation; the chemical and physical data from which the behaviour of the material in various circumstances may be predicted or explained are supplied also. These matters have an important bearing on the methods to be followed in analytical procedure, analysis being the express subject of the book. Analytical directions appear usually in the form in which they were presented by the investigators who devised them. Methods for the analysis of fats are in general devised on an arbitrary plan; this is the inevitable consequence of the nature of fatty materials. No chemist dealing with fats

[4] *Consultations du Médecin-Praticien.* Par le Dr. Fred. Blanchod. Paris: J. B. Baillière et Fils. 1925. (Roy. 8vo, pp. 584. Fr. 35.)

[5] *Dyspepsia, its Varieties and Treatment.* By W. Soltau Fenwick, M.D., B.S.Lond. Second edition, revised. London and Philadelphia: W. B. Saunders Company. 1924. (Med. 8vo, pp. 515. 24s. net.)

[6] *Allen's Commercial Organic Analysis.* Edited by Samuel S. Sadtler, S.B., Elbert C. Lathrop, A.B., Ph.D., C. Ainsworth Mitchell, M.A., F.I.C. Vol. II. Fifth edition, revised and in part rewritten. London: J. and A. Churchill. 1924. (Med. 8vo, pp. ix + 807; 23 figures. 30s. net.)

may ignore the paths trodden by his predecessors in this wilderness of chemistry. Accordingly as much importance attaches to the records of experience in the use of methods as to the details of directions concerning them. In this respect the book is a particularly rich storehouse of information. Sections dealing with subjects of prominent interest are contributed by chemists of distinction in their special spheres. They are men well known as investigators and authors of commentaries on their respective subjects. It is a frequent cause of complaint that in technical books little heed is paid to the relation between technical processes and the chemical facts on which they are founded. In many cases, it is true, the latter are but imperfectly known, yet it is desirable, for the sake of a better understanding of the subject as well as for the higher development of chemistry, that nothing should be left obscure in the borderland between chemistry and its technical applications. It is satisfactory to note in the volume before us a continued improvement in this respect. We do not observe any section of the contents calling for special mention, and it will suffice to say that the book maintains its character as a leading work on the subject.

NOTES ON BOOKS.

IN the volume on *Toxicology*[1] Dr. FRANK P. UNDERHILL has collected a great deal of useful information, and some parts of it are written clearly and effectively. It is sadly lacking, however, in some of the qualities most desired in a book of instruction. Some paragraphs exhibit signs of the sort of haste with which a candidate writes answers to questions set for examination; others resemble the jottings prepared from a lecture. On page 168 there is an idiomatic use of the word "will" which may have been handed down from Mercian English but is not now current. It reads, "One gram will undoubtedly cause death in an adult, although recovery has followed from the ingestion of more than three ounces." Evidently the author means "One gram may." But there are other and many instances of incautious expression: ergotine, for instance, seems to be confused with ergotoxine, and there are cases in which the treatment of the subject is ill considered. The author states as an example of how poisoning may not be induced that arsenic in large doses may act as an irritant to the stomach, causing vomiting, with prompt ejection of the poison, so that few or no toxic symptoms result. Our comment is that tartar emetic would have furnished a better example of the fragment of truth contained in the statement. Yet even with tartar emetic it would have been proper to point out that the danger increases with the magnitude of the dose, for with a larger dose a larger residue is likely to escape ejection. There is a contrast between the effects of zinc sulphate and those of zinc chloride, as well as between the effects of concentrated and dilute solutions of the latter, but these facts are not made clear by the author's description. So far as we have observed, the poisonous property of oxalates receives no other notice than that contained in the warning that alkalis are ineffective as antidotes to oxalic acid. The selections are capricious. Acetic acid is treated as a poison, but hydrofluoric acid is unnoticed. No objection need be raised against a description of toxic effects arising from the absorption of magnesium sulphate, but attention to effects so rare is inconsistent with the omission of reference to quinine as a poison; death has been reported from an overdose of quinine on a number of occasions; the symptoms were well known in the time of Jonathan Pereira, who described them minutely, and its chronic effects are of the greatest importance in malarial districts. Again, there is much disorder in the arrangement of subject-matter. We are at a loss to know the reason for such hasty production. If the author was racing against another writer it would have been sport to see his competitor's product. If he was not racing he ought to begin again and write it afresh. We are sure he could do better.

The authorities of the Washington University of St. Louis, Missouri, U.S.A., last year established in their medical school a lectureship in the history of medicine. Dr. M. G. Seelig, Professor of Surgery, who delivered the first course of lectures, has published them under the title of *Medicine: An Historical Outline*.[2] The subject is obviously too vast to be treated adequately in so small a volume as this, but the author probably succeeded in interesting his audience and in arousing intelligent curiosity, which may be satisfied by the study of larger works. The lectures were delivered in the winter semester of 1924, and this fact suggests that they were hastily prepared for the press; the supposition is strengthened by certain small errors and omissions. For instance, there is no mention of Bretonneau and his work on diphtheria, and although Glisson is referred to as an anatomist his claims to fame as a pathologist and first describer of rickets are ignored. No doubt in the next edition Sir Francis Bacon, Lord Verulam, will no longer appear as Lord Francis Bacon, Stromeyer will regain his Christian name of Louis instead of George, and Robert Knox the anatomist will no longer be in danger of confusion with the great Scottish reformer. We cannot think that "a medical nobleman" is a happy translation of "medicus nobilis" as applied to Sydenham. Did Harvey really write "omnis vivum ex ovo"? Dr. Fielding Garrison writes an interesting foreword in which he misquotes a Bab ballad, but even an imperfect acquaintance with the Gilbertian classics is to be welcomed. The interest of the book is enhanced by forty-eight plates and a frontispiece, mostly reproductions of well known portraits.

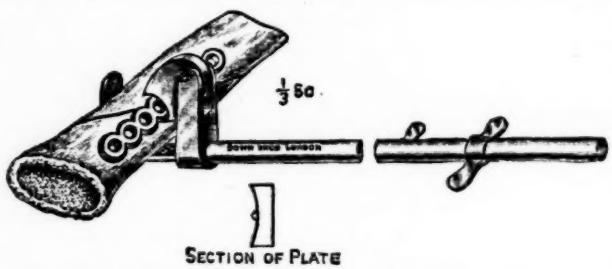
[1] *Toxicology, or the Effects of Poisons.* By Frank P. Underhill, Ph.D. Philadelphia: P. Blakiston's Son and Co. 1924. (Post 8vo, pp. ix + 292. Dols. 2.25.)

[2] *Medicine: An Historical Outline.* By M. G. Seelig, M.D. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1925. (Cr. 8vo, pp. xviii + 287; 48 plates. 11s. 6d. net.)

MEDICAL AND SURGICAL APPLIANCES.

A Bone and Plate Clamp.

MR. MEURICE SINCLAIR, C.M.G., M.B., Ch.B., Major R.A.M.C., Ret. (London), has devised the instrument shown in the illustration mainly for bone-plating operations. With it such operations, he says, are much shortened and greatly simplified, as the fragments can be securely held in their alignment while the fracture is bridged by means of a specially modified plate, which is firmly gripped by the clamp or clamps to the upper and lower fragments of bone. The bone can now be safely and readily drilled and the plate secured by means of screws without loss of alignment, without obstruction to vision, and without those obstructions which frequently arise during the fixation, especially of the initial screws. The bone and plate clamp may be used singly or in pairs, one for each main fragment of a fracture. After the fracture has been repositioned they clamp and hold the bone fragments and the metal plate



in situ, until no longer required, when they are easily removed. The clamp used for the bones of the upper limb is similar to that used for the lower, but is of lighter construction.

A clamp consists of a male stem and a female tube, and has an over-all measurement of 14 in. for the lower limb. The male stem is made of 5/16 in. round steel, is flattened and hooked at one end in order to aid the gripping of the bone, while the other end is threaded, and has a keyway, slotted along the underside, to prevent the hook from rotating when the instrument is being used. The female tube is 10 in. long and takes the male stem inside. At one end it has a jaw brazed to the outside, and at the other end it is fitted with a butterfly nut, which takes the threaded end of the male stem. The portion projecting beyond the nut is sheathed in a thimble of metal, in order to prevent undue destruction of rubber gloves. The bone plates are a modification of Lane's, and the surface of the plate which is applied to the bone is concave, with a "kick up" (as it is technically called) between each hole. These plates fit the convexity of the bone accurately, and the "kick ups" prevent slipping of the plate on the bone. When the plates are firmly gripped by means of the clamps greater security is obtained.

Mr. Sinclair considers such an instrument and plate essential to obtain the results detailed in the article in the BRITISH MEDICAL JOURNAL of November 17th, 1923. The clamp and plates have been made by Messrs. Down Bros., 21, St. Thomas's Street, S.E.1.

Carrying the Thermometer.

"A. J. V. B." tells us that for some years he has been carrying his thermometer tacked on to one of the sides of his binaural stethoscope. The thermometer is in an ordinary metal case, and is held in position by two rubber bands cut from a piece of drainage or irrigator tubing; the case is easily turned to one side for opening. He finds many advantages in thus carrying a thermometer: among others, that it makes one article less to gather up on starting out.

British Medical Journal.

SATURDAY, APRIL 25TH, 1925.

THE TREATMENT OF MENTAL DISORDER.

In the evidence given before the Royal Commission on Lunacy and Mental Disorder on behalf of the British Medical Association[1] emphasis was laid on the need for more flexibility in arrangements for dealing with mental cases. It was pointed out that if the best possible is to be done for mental patients the facilities for treatment and the types of accommodation must be sufficiently various to suit the particular form their illness assumes. It is quite understandable that the Legislature should be reluctant to relax laws intended to protect the persons and estate of those unable to care for themselves and their affairs, but fortunately the existing laws have been elastic enough to enable progressive movements to develop, so that experience has been obtained of the extent to which some relaxation of the law can safely be permitted. A particularly difficult question is that of the treatment of persons of unsound mind who need care and control in nursing homes, and it is of interest and importance to observe that this type of accommodation has been utilized on a large scale in homes connected with the Royal Hospital at Morningside.

Professor G. M. Robertson gave an account of this new development at Morningside in his annual report for 1924, a summary of which we published on March 7th (p. 475). When, seven years ago, further accommodation for private patients became necessary, the managers, recognizing that the public had become more and more averse to sending patients suffering from mild and curable attacks of mental disorder into mental hospitals, gave careful thought to the particular form which any new accommodation should take. They decided to establish, quite detached from the mental hospital, nursing homes in which patients in the early stages and with curable forms of mental disorder might be received. The expectation was that they might recover without being certified or entering a mental hospital; the report shows that this expectation has been fully justified. During the whole of last year four fully equipped nursing homes, accommodating about fifty patients, have been working in the suburbs of Edinburgh, and a country mansion for convalescent patients accommodated a dozen or more. The managers have now purchased another mansion with 250 acres of land, and in this large building the scheme will be further developed. In view of its bearing on possible legislation this new venture would seem to merit the closest study, and we venture to suggest that Professor Robertson would help still further the solution of the legislative problem if he gave details of the cases treated in these homes, classified from a social as well as from a psychiatric standpoint. In the evidence given on behalf of the British Medical Association it was suggested that a convenient social classification of mental disorders would divide its subjects into the "mentally unsound," for whom measures of detention and control are necessary, and the "mentally ailing," for whom such measures are not required. It is for the former class in particular that some modification of the law in England is desirable. As things are at present many of them could not be treated away from home, except in mental hospitals or under single care, without a breach of the law, though their mental condition would warrant their being dealt with in suitable homes other than actual mental hospitals. Such cases are in general somewhat vaguely described by psychiatrists as mild, early, or curable, and it has not been made sufficiently clear to the lay mind what type of case would benefit by proposed changes in the law, nor for whom at present inadequate provision is made. No doubt the majority of the cases treated in the homes in connexion with Morningside would come under the category of the "mentally unsound" as above defined, and it is for this reason that a more detailed description of these cases would probably be found of considerable assistance in the endeavour to solve the problem of future legislation.

The fact that the family medical attendant continues to treat his own patients in these nursing homes, as he is accustomed to treat medical and surgical cases, is a particularly valuable and important feature in this new development. Not only is psychiatry in this way brought into the closest relationship with general medicine, but it gives confidence to both patients and relatives and does away with that sense of isolation from life which removal into a mental hospital is apt to engender. It can hardly be insisted too strongly that mental disease, which in its last analysis must be regarded as the objective expression of a disordered, biologically inferior, or unduly sensitive physical organism, presents arduous problems only to be solved by a closer union of psychiatry and medicine. For this reason we welcome a new development, which not only affords mental patients widened facilities for treatment, but also brings the psychiatrist and general physician into closer co-operation. The value of these homes must also be greatly increased by the fact that they are organically connected with Morningside Mental Hospital. Professor Robertson is of the opinion that such homes should be under disinterested management, and should be started only under the aegis of bodies which already have some experience of the provision needed; he points out also that such homes must be under the supervision of the department (the General Board of Control) which keeps under observation places for the treatment of patients in an analogous condition. Any homes or institutions in which patients of unsound mind are under treatment, whether they place themselves under control by their own wish as voluntary boarders or whether they are under certificate, should be supervised by a Government department, to prevent, as Professor Robertson says, scandals which might arise from the adoption of inefficient methods and from the possibility of injustice to certain patients.

The report goes on to show that voluntary admission has grown into such favour in Scotland and to such proportions as to amount to a revolution in practice with regard to mental diseases. At the present time, of all the private patients admitted to mental hospitals in Scotland 40 per cent. entered as voluntary patients; this percentage is increasing year by year. A similar state of affairs obtains in England; thus the Retreat at York and Bethlem Hospital have a large proportion of voluntary boarders, and the Maudsley Hospital only admits voluntary patients, many of whom are suffering from severe psychoses. From these facts it is obvious

[1] Printed in the SUPPLEMENT to the BRITISH MEDICAL JOURNAL of January 17th, 1925.

that many of the well-to-do subjects of mental disorder are able to obtain treatment on a voluntary basis which forms an ideal alternative to certification. The poorer classes are, however, much less favourably placed, especially in England, where the law does not admit of voluntary admissions to the rate-aided mental hospitals, except in the case of the City of London Mental Hospital. As a result of this many persons, not certifiable but sorely in need of treatment and willing to undergo it voluntarily, either drift into a severe psychosis or, in a number of instances, commit suicide. Faced with such cases the practitioner is almost helpless, as there is no place within the patient's means to which he can be sent. In this respect the law is obviously in serious need of amendment. Even in Scotland, where there is no legal bar to the voluntary admission of poor patients, the fact that the parish councils receive the lunacy grant (amounting to about 2s. 9d. weekly for each patient) only in the case of certified patients means that this method of reception is seldom adopted. In the annual report of the Aberdeen Royal Asylum Dr. R. Dods Brown says that one rate-aided voluntary patient is resident in the hospital; he refers also to the interesting fact, which has already been pointed out in this JOURNAL, that several parishes in Argyllshire have agreed to allow suitable cases to reside as voluntary boarders in the district mental hospital. A passage quoted from the last annual report of the Commissioners of the General Board of Control for Scotland reveals the Board's sympathetic attitude towards the tendency to allow patients to enter asylums voluntarily for skilled treatment in the earlier stages of mental illness when the prospects of recovery are great. If pauper patients also were permitted to enter asylums voluntarily by a rearrangement of the lunacy grant, "the certification of patients, which is not necessary for medical purposes, would fall from the present level of about 100 per cent. to 60 per cent. or even less of the patients admitted to asylums. Certification of the insane would then fall into its proper place of a social and legal necessity."

The Scottish Board of Control also remarks: "In the treatment of all such cases the Board have come to the conclusion that district boards, either individually or in combination, and the authorities of royal asylums, should be empowered to establish nursing homes, hospitals, outdoor and indoor clinics, particularly by arrangement with the managers of general hospitals throughout the country, where anyone desiring advice, care, and treatment may receive it as a voluntary patient. It is felt that such an arrangement would tend to dispel the natural fear that the person seeking advice, care, and treatment might at any time be certified as insane and detained against his own free will." This quotation admirably outlines the kind of developments which we hope to see in the near future. It indicates the varieties of accommodation necessary for the treatment of the various forms of mental illness. Such schemes will doubtless call for additional expenditure at the outset, but they will prevent many persons from becoming a permanent charge on the community, and must in the long run exert an appreciable effect upon the general mental health of the community.

Further information about the voluntary boarder system and the treatment of early cases in Scotland will be found in our report (at page 798) of the evidence given by Professor Robertson, Dr. Comrie, Dr. Carswell, and Dr. Marr before the Royal Commission on Lunacy and Mental Disorder.

SCARLET FEVER.

LIKE all other advances in knowledge, those which we owe to Drs. George and Gladys Dick for their painstaking work on scarlet fever open up more territory even before the newly won ground has been completely surveyed. These two research workers have taught us that a particular variety of streptococcus originates scarlet fever, that the symptoms of the disease are caused by the toxin of this germ, that the tissue cells of a recovering patient provide a protective antitoxin, and that scarlet fever may be produced by experimental inoculation with haemolytic streptococci and cured with an antitoxin serum. If we accept all this—and there is strong experimental evidence in its favour, as we have often observed in our comments on this work as it has been published piece by piece—there remain two unsettled questions of outstanding urgency. One is, How are these specific streptococci to be distinguished from other streptococci? The other is, How can the antiserum be prepared and accurately standardized? Both these problems have been tackled by the Dicks, and they have written about these questions in two papers which appear in the *Journal of the American Medical Association* for March 14th, 1925.

First, with regard to methods of recognizing scarlet fever streptococci. The streptococci have always been a troublesome genus to the systematists, and in spite of their prodigious labours at classification we are not yet in possession of any quick and accurate means of distinguishing the different kinds of streptococci one from the other. The haemolytic streptococcus of scarlet fever resembles other haemolytic streptococci in its morphology; its appearance in tubes of culture media presents nothing sufficiently distinctive; and, in the hands of most workers, fermentation reactions and other refinements of bacteriological diagnosis have not separated the scarlet fever streptococcus from kindred cocci. Even agglutination reactions have disappointed their early promise, and the Dicks conclude from the studies of others that the agglutination test is not a reliable means of identifying scarlet fever streptococci. They find, however, that the haemolytic streptococci of scarlet fever can be recognized by the specific toxin they produce, and suggest the following ingenious method of carrying out the test. A blood broth culture is incubated for three or four days, passed through a Berkefeld filter, and the sterile filtrate diluted 1 in 500 with normal saline. The essence of the test is to determine whether or not this diluted culture filtrate contains the scarlet fever toxin; if so, the suspected streptococcus was the genuine scarlet fever germ. The question is answered by mixing 1 c.cm. of the sterile filtrate with 1 c.cm. of serum from a convalescent scarlet fever patient; another 1 c.cm. of sterile filtrate is mixed with 1 c.cm. of salt solution to act as a control. Both mixtures are incubated one hour, and skin tests made on a person known to be susceptible to scarlet fever, using 0.1 c.cm. of each mixture. At the same time a control test is made with 0.1 c.cm. of the ordinary standardized skin test solution to determine susceptibility to scarlet fever, and this control, of course, should be positive. If the mixture of filtrate and salt solution also gives a positive reaction, while the filtrate-convalescent serum mixture gives a negative result, it may be concluded that the particular streptococcus under examination was capable of producing a toxin that is neutralized by convalescent scarlet fever serum. It was therefore a scarlet fever streptococcus.

We admit the logic of this test and respect the

ingenuity with which it has been devised, but foresee many pitfalls. Neither the suspected toxin nor the serum of the convalescent patient can be standardized, and a test depending on the neutralization of two opposite substances, neither of which can be measured exactly, is likely often to mislead. Even if these difficulties were overcome the necessity of performing the test in a convalescent volunteer is likely to limit its wide application. But we acknowledge that the Dicks have established an important scientific fact, which in certain circumstances may be put to practical use.

The second paper—on the therapeutic results obtained with concentrated scarlet fever antitoxin—carries this research a step further into the fields of everyday medicine. More than a year ago Drs. George and Gladys Dick reported that they had produced a scarlet fever antitoxin by immunizing horses with scarlet fever toxin, and they now publish a preliminary report on the preparation, standardization, and dosage of concentrated antitoxin. This, in brief, is their method. A blood broth culture of scarlet fever streptococci is incubated six days, filtered, and the sterile toxin injected into horses subcutaneously in graduated doses, beginning with 20 c.cm. and increasing to a litre. After preliminary tests have shown that the horse serum has developed antitoxin the horse is bled and the serum concentrated. The antitoxin content is standardized against a stock toxin. The Dicks have found by experience that 1,000 skin test doses of toxin, if injected without previous immunization, produce a clinical condition resembling a mild attack of scarlet fever, and they chose the amount of antitoxin required to neutralize this dose of toxin as a basis for standardization. The concentrated antitoxin is standardized so that 1 c.cm. of concentrated serum neutralizes 1,000 skin test doses of toxin, the tests being carried out by incubating mixtures of toxin and antitoxin, and then examining for unneutralized toxin by performing skin tests on susceptible individuals. Here again, although the method is logical and ingenious, its applicability is limited by the fact that all standardizations have to be carried out on selected human volunteers.

There seems little doubt that this concentrated antitoxin is a useful agent in the treatment of scarlet fever. From the figures the Dicks give we note that there were far fewer complications and sequelae of scarlet fever in 29 cases treated with antitoxin than in 15 control cases which did not receive antitoxin; in fact, in 21 moderately severe cases complications and sequelae were limited to 2 cases of otitis media. The antitoxin was injected intramuscularly, and the best results followed when it was given early in the disease. The immediate benefit obtained from the serum treatment was evidenced by fading of the rash, improvement in the patient's general condition, and disappearance of fever.

A third paper in the same number of the *Journal of the American Medical Association*, by Dr. O. B. Nesbit, on the Dick test and immunization against scarlet fever, deserves a word or two of comment. Dr. Nesbit examined 2,162 school children with the Dick test, and found 40 per cent. positive. Many years must elapse before much can be learnt from the after-history of these children with respect to scarlet fever, but it seems that in the last six months two cases of scarlet fever have appeared among the Dick-positive group and none among the Dick-negative. We note that in one school the administration of toxin to 67 pupils did not result in any loss of time. In one school 57 children were submitted to Schick and Dick tests at the same time, and every child was present the following day for the reading of the Dick tests. Dr. Nesbit concludes that 65 per cent. of pupils susceptible to scarlet fever were rendered immune by injection with three doses of scarlet fever toxin.

CUSHING'S "OSLER."

The Life of Sir William Osler,[1] by Professor Harvey Cushing, has appeared; a review copy reached us on Monday. It is a rather big book in two volumes, making together 1,438 pages. A preliminary glance shows that it is a biography in which the subject is allowed to tell his own story as far as possible by letters and those informal notes and postcards which Osler showered about him, to the great joy of recipients. It is well illustrated, and one observation that springs to the eye is how little Osler changed in physical appearance from the time when he was a professor at McGill University, Montreal, in 1878, to the time when he was Regius Professor of Medicine at Oxford. We are given a photograph of him, taken there early in 1915, standing in characteristic attitude with his arm linked in his son's, that only son—"a son after my own heart"—whose death on active service some two years later cast so deep a shadow on the two years more William Osler himself was to live. The book is in three parts; the Canadian period (1849-1884) and the period of the United States (1884-1905) fill the first volume; the second is concerned entirely with the Oxford period (1905-1919). We intend to publish a review in an early issue.

THE ADRENALS AND SEXUAL DEVELOPMENT.

It is known that tumours of the adrenal gland are associated with precocious puberty in the male and precocious development of secondary male characteristics in the female. A few years ago Krabbe of Copenhagen, in a paper written in English and published in America,[2] advanced a theory to explain this strange fact. The sexual gland in the early stage of development lies close to the portion of the genital ridge where the adrenal cortex is developed. Laulanié, Jonesik, Nagel, and Coert came to the conclusion that the primitive ovary is hermaphroditic; this view was confirmed by A. Kohn as lately as 1920. While the testis develops nearly directly from the undifferentiated original mass, the ovaries pass through a stage in which the cortical part may be considered female, but the deeper or medullary part male or testicular. Krabbe reproduced the figures given by Kohn: in the male is shown pure testicular development; on the external surface is the germinal epithelium, from which has developed medullary cords which will become tubuli seminiferi; between these cords are the interstitial cells. In the development of the female sex gland the epithelium of the germinal ridge forms medullary cords as in the male, with interstitial cells centrally situated, but the cortical part of the primitive gland contains primordial follicles and follicles with a zona granulosa. Normally the male sexual gland tissue of the primitive ovary undergoes atrophy and disappears. Should some of the male germinal cells become included in the developing cortical cells of the adrenal gland, they may later in life develop a tumour consisting of interstitial cells. It might be argued that if this theory were correct they would be seen in the tumour, but it is very difficult to distinguish interstitial cells of the testis from cortical adrenal cells. While there is masculinization of females with adrenal tumours, there is no feminization of boys who have had adrenal tumours. According to Krabbe, this can be

[1] *Sir William Osler*. By Harvey Cushing. Two volumes. Oxford University Press. (Price 37s. 6d.; India paper edition, 1 vol., 50s.)
[2] *New York Medical Journal*, 114, 1921.

explained on the view that in male embryos there is a pure testicular stage, while in females there is an ovario-testicular stage. According to Krabbe, tumours of the adrenal cortex are developed from an abnormally placed adrenal gland. The male part of the primitive ovary has not remained rudimentary and disappeared, but has become a part of the cortex of the adrenal gland and developed as a part of it. On this hypothesis the tumour cells developed from the adrenal cortex are not developed from adrenal cortical cells, but from cells which represent the medullary male part of the ovary, so that the tumour cells secrete a hormone characteristic of the male; virilism in girls, it is suggested, is produced in this way. The presumption of a condition of hermaphroditism in the female sex gland in the early stages of development is therefore held to explain precocious puberty in males and virilism in females associated with tumour of the adrenal gland. Several recorded cases of ovario-testis support this view. That of Blair Bell is of particular interest. In it an ovario-testis without any abnormality in the adrenals was associated with masculinization. Removal of the gland led to disappearance of the male characters. Microscopical sections of the ovario-testis showed a central testicular portion with infantile seminal tubules surrounded by interstitial tissue with an outer capsule of ovarian tissue, containing Graafian follicles. Berblinger has recently described a very similar case. A girl at the age of 12 began to grow a beard, but menstruation set in at the age of 16. At the age of 21 a tumour the size of a walnut was removed from the right labium. Psychical development—which till then was indifferent—became now typically female. The tumour was an ovario-testis containing typical Graafian follicles externally, and internally rudimentary testicular tissue. It may be noted in this connexion that Steinach and Sand found that intersexuality in mammals could be caused by combining ovarian and testicular implantation in the same individual castrate. Recently Kemp,[1] in an article also written in English, has subjected these views of Krabbe to criticism. As to the morphological factors upon which is based the view that the primitive ovary is bisexual, he holds that the medullary cords of the ovary and seminiferous tubules of the testis may be considered as homologous. Similarly the cortex of the ovary and the superficial covering of epithelium of the testis may be regarded as homologous. The process of development in the primitive sexual gland is accentuated in both sexes, though in varying degree, more strongly in the ovary than in the testis; the sexual gland, as regards organic shape and structure, is similar to the other internal genital organs, and this dualism is maintained in a somewhat greater degree in the ovary than in the testis. A point of great importance is that as soon as it can be determined to which sex the primitive sexual cells in the medullary cords belong, they are female. The first decisive feature distinguishing the primitive ovum from the primitive sperm cells is the primitive follicle, the single-layered stratum granulosum that forms around the primitive ova—the oögonia—but not around the spermatogonia. The primitive follicles are to be seen in the medullary cords at a very early embryonic stage. In man they are to be found from the sixth foetal month, but are said to disappear shortly after birth. This statement is, however, not universally accepted. Kemp bases his view against Kohn's theory, upon which Krabbe relies, on the great difficulty of deciding whether the medullary cords bear any definite male or female characters until primitive follicles are developed. We cannot agree with Kemp in his assertion that "there is no probability, let alone proof, to warrant attributing the power of hormone production to the interstitial cells when the corresponding generative tissue is not present." He concludes with the following statement: It is not merely absolutely unproved, but also highly improbable, that the medullary cords of the ovary or the connective tissue cells lying between them could become displaced into the adrenals, and, being further developed there, produce a testicular hormone. It is known, however, that the embryonic epithelial cells of the seminiferous tubules, even at birth, are not of a characteristic form like the primitive ova. The subject is of very great interest from many points of view, and before it can be settled further evidence is required.

[1] *Acta Pathologica et Microbiologica Scandinavica*, vol. i, fasc. 2, 1924.

SCANDINAVIAN MEDICAL LITERATURE.

THOSE to whom English is the native tongue are greatly interested and not a little gratified by the growth of the study of the English language in the three great Scandinavian countries. Sympathy with them is traditional in England, where in some parts is a strong strain of Scandinavian blood, evidenced by place names and also by the construction of the common surnames. The extent of the movement in Scandinavia is indicated by the existence of flourishing societies. The Anglo-Danish Society has its headquarters in Copenhagen, the Anglo-Swedish in Stockholm, with branches in the university towns Upsala and Lund; the Anglo-Norse, established in Oslo (Christiania) has branches in Stavanger and Bergen. These societies are large and growing, and the *Times Literary Supplement*, from which we take this information, has stated recently that among their members there is "a quite extraordinarily high standard of English speech and culture." Evidence of the growth of a preference for English as a second language is afforded also by the fact that Scandinavian men of science show a growing disposition to publish the results of their researches in our language. We have mentioned this on two or three occasions within the last few months when giving an account of recent papers, and another instance is afforded by the papers of Krabbe and Kemp noticed in another paragraph this week. With one exception the articles to which we refer were published in the series of Scandinavian medical periodicals published under the general title *Acta*. The Acta dealing with surgery, gynaecology, medicine, laryngology, pediatrics, skin diseases and syphilis, and radiology, are edited in Stockholm. The place of publication of *Acta Pathologica*, in which Kemp's paper appeared, is Copenhagen. Further, it will have been observed that Professor Moellgaard of Copenhagen not only contributed to our columns a paper on the gold treatment he has devised for tuberculosis, but wrote his book on the subject in English. First-rate scientific work is being done in the Scandinavian countries, and we have also much to learn from them in matters of administration; Denmark, for instance, has solved its Poor Law problem with a completeness England may well envy. From the other point of view there is this to be remembered, that English is spoken by many more people who read than any other language, and that, owing to its directness and conciseness, when well written, and to the ease with which it assimilates Latin and Greek roots, it lends itself well to the expression of scientific facts and speculations. We may therefore look forward to a not distant time when the work done by the medical profession in Denmark, Norway, Sweden, and, we may add, Holland, will be better known than it is to-day, very much to the advantage of medical science throughout the world.

THE USE OF THE ELECTRO-CARDIOGRAPH.

WE have received two inquiries from a practitioner who has acquired an electro-cardiograph and who wishes to know what use he can make of it in estimating the suitability or otherwise of patients to undergo general anaesthesia, and in determining in insurance cases that a particular life

is uninsurable or requires an additional premium. The electro-cardiograph, like Mackenzie's polygraph, has served a useful purpose in demonstrating the exact nature of many forms of cardiac irregularity and the site of their production in the conducting tissues of the heart. The practitioner who has studied and understood these graphic records has gained additional knowledge, and this knowledge will enable him to deal more intelligently with many problems in his clinical work. These graphic records, however, do not reveal more than certain disorders or disturbances in different areas of the heart, and they give no indication as to how far the functional efficiency of the heart has been affected by them. To take a familiar example—that of auricular fibrillation: we can get a very clear picture of the irregularity in an electro-cardiographic tracing, but we get no information as to whether the patient is suffering from cardiac distress or requires treatment. In former days some were content to determine the suitability of a patient for an anaesthetic by means of a stethoscope only, but that method has now fallen into disrepute. Similarly, in the present day some have decided the treatment of a cardiac patient by electro-cardiographic tracings only, and without seeing the patient, but such a method is not likely to establish itself as a common practice in English medicine. Reverting to the original questions, we should say that the electro-cardiograph cannot be utilized for deciding the suitability or otherwise of a patient for general anaesthesia. Whatever hidden disturbance the tracings may reveal the practitioner will have to decide by other methods of examination as to their effect and as to the strength and efficiency of the cardiac action. As regards life assurance the same standard applies, and the examiner should not be overmuch influenced by a cardiographic tracing. From the insurer's point of view the less said about it the better, for if a board of directors read that a P-wave is turned upside down or that the R-wave is split they will anticipate the worst and may reject the applicant at once.

MALARIA CONTROL IN PALESTINE.

THE Haifa Malaria Research Unit, maintained by the American Joint Distribution Committee in co-operation with the Government of Palestine, is under the control of Dr. I. J. Kligler, who was formerly associated with the Rockefeller Institute; it has recently issued its report for 1923. The unit is primarily concerned with the endeavour to establish malaria control on an extensive scale in Palestine at a low cost. Much valuable information has been obtained by it during the last few years about the geographical prevalence of malaria, the types of mosquitos concerned, and the nature of their breeding places; while, in addition, practical education of the public in malaria control has been undertaken. With a view to the permanent elimination of mosquito breeding places, the engineering division of the unit has made detailed surveys of swamps, and has stimulated co-operation between settlements and villages in drainage schemes. Experience gained during 1923 has shown that many of the more important swamps can be eliminated with relatively small expense, and that, with the aid of small financial grants, the settlements themselves will be able to eradicate permanently some of the chief sources of malaria. The laboratory of the unit, by its clinical investigations and special research work, has been able to render valuable service. The report deals in detail with these various activities, and is well illustrated by photographs, charts, and statistical tables. The chief breeding places of the malarial mosquito appear to be the coastal marshes, the overgrown wadis (rivulet beds), and the cemented cisterns for domestic water storage. These large coastal marshes require radical drainage, which will involve considerable expense. One such swamp has already been drained as the result of a concession granted to the Athlit Salt Company, and another company has agreed to drain the largest of these areas—the Cabara swamp—on the basis of a land concession to be granted by the Government. The Hule marshes above Lake Meiron, which lies north of the Sea of Galilee, are the largest swamp areas in Palestine, and render the surrounding plain uninhabitable. Important drainage operations are also being undertaken by the Jewish National Fund and other Jewish agencies, active supervision being supplied by the Malaria Research Unit to prevent outbreaks of malaria or unnecessary delays in the work. During the year under review wide areas, hitherto infested with malaria, have thus been rendered habitable. Five drainage schemes were also independently completed by the unit, and surveys were made for several other schemes to be put into operation during 1924. All these undertakings deal with breeding places solely, or chiefly, responsible for the malaria of large groups of the population. They are all planned on most economical lines, and in every case part of the small cost is borne by the people to be benefited. Education of the native population by bringing about the closing of the cisterns, the proper use of spring water, and the treatment of accumulations of stagnant water, will effect a marked improvement. In each area as it was taken into consideration the programme was as follows. From January to March, when there was no mosquito breeding, a complete survey was made of possible breeding places and of the human parasite and spleen rates, followed by intensive treatment of carriers. A systematic house-to-house search for hibernating mosquitos was also organized. These preparatory steps aroused public interest and paved the way for the actual campaign, which started in April with the beginning of the anopheles breeding season and went on until the heavy rains, which, in 1923, did not occur until the end of December. The chief methods of control employed were drying by intermittent damming of streams, and cleaning pools and streams with or without larvicides, including a crude paraffin and castor-oil mixture, Paris green, and a watery solution of cresol. The statistical tables show that a marked decrease in the malaria incidence followed the application of these measures. Quinine prophylaxis was only employed temporarily when mosquito control had broken down. No evidence was obtained that the incidence of infected mosquitos was higher than in Macedonia or other malarial areas.

BOSTON PSYCHOPATHIC HOSPITAL.

THE report of the trustees of the Boston Psychopathic Hospital for the year ending November 30th, 1923, is of considerable interest. The trustees have reason to be proud of the achievements of their hospital. They are alive to the need for a better understanding of mental troubles of all sorts, and "particularly cherish the fact that, side by side with the treatment of symptoms and diseases, there is a steady attempt to get at fundamentals for understanding the disorders of mental life." The nature of the treatment employed and of the research which is being prosecuted is shown in the numerous reports submitted to the board of trustees, all of which together make up the present document. There is, first of all, the report of the director of the hospital, Dr. C. Macfie Campbell, giving a general presentation of the work of the institution. The detailed analysis of this work is found in the reports which follow of the chief medical officer, the out-patient department, the biochemical laboratory, the psychology department, the neuro-pathological laboratory, the department of therapeutic research, the chief executive officer, the social service department, and the department of occupational therapy. The manifold activities of the hospital reflected in this list show how varied are the attempts to grapple with the problems of mental disease, both from the stand-

point of ameliorating the patient's state and of arriving at a fuller understanding of the true nature of mental disorder. There are many difficulties in the way, and many prejudices to be overcome. Ignorance of what is being done to solve the problems of mental disease is surprisingly widespread, and Dr. Campbell has to admit that "the number who realize the scope of the work of the hospital and who grasp its relation to the general health problems of the community is not large." Dealing with existing prejudices, he expresses the opinion that "we have not altogether emancipated ourselves from the mediaeval attitude to mental disorder, and certainly not from the tyranny of words." His particular instance of the tyranny of words is that of "insanity." In a recent article on the treatment of mental disorders Dr. Edward Mapother warned his readers of "the power of words to stereotype thought"—the futility of being satisfied when a disease is given a name, and when a statistical prognosis is advanced based on that name. With us, in recent years, the word which has been most assailed because of its tyranny is "asylum"; and it was in the hope of removing the stigma associated with that name that the term "mental hospital" has come into use. It was not, of course, the change of name that mattered so much as the change of conditions which helped to give that name its reproach. As the British Medical Association has said in its recent Memorandum of Evidence to the Royal Commission on Lunacy: "More important, however, than the terms used, if the best possible is to be done for those who are mentally disordered, are the arrangements provided and the conditions governing them."[1] An institution whose primary medical object is not treatment does not become a "mental hospital" by calling itself such. "The hospitalization of asylums"—a phrase associated with the strenuous advocacy of Professor G. M. Robertson—must steadily continue and progress. Patients in a mental hospital should be afforded the same medical facilities as would be due to them in a general hospital. Many patients admitted to mental hospitals suffer from bodily as well as mental illness, the latter often the outcome of the former, and such cases specially demand skilled medical treatment and skilled nursing. "So long as general hospitals have no special service for patients with mental disorders," says Dr. Macfie Campbell, "a transfer to a psychopathic hospital will be necessary; but when, in the course of time, physicians and nurses shall in their curriculum have had adequate psychiatric training, many patients will remain in the wards of a general hospital who are at the present time transferred to a psychopathic hospital." From what has been said in these columns on many occasions it may be judged that we endorse Dr. Macfie Campbell's views on this matter, and would wish to see, side by side with the hospitalization of asylums, a more widespread practice of treating many mental cases in general hospitals. This would prove beneficial to patients, physicians, students, and nurses alike.

THE TAUNGS SKULL.

DR. R. BROOM, F.R.S., whose contributions to anthropology and comparative anatomy have made his name well known, has sent to *Nature* (April 18th, p. 569) an account of an inspection of the Taungs skull which he made during a recent visit to Johannesburg. Professor Dart, who described the skull and applied the name *Australopithecus africanus*, gave him every facility. With regard to the geological age of the being, Dr. Broom says that it can safely be asserted that the skull is probably not older than Pleistocene times, and perhaps even as recent as the *Homo rhodesiensis* skull. Though, therefore, the skull is not likely to be older than what we regard as the human period, the age of the specimen, Dr. Broom says, in no way interferes with its being a true "missing link" and the most important hitherto discovered. He would put it earlier than Pithecanthropus in the evolutionary stem, and much earlier, therefore, than Eoanthropus, which "has a human brain with still the chimpanzee jaw. In Australopithecus," Dr. Broom continues, "we have a being also with a chimpanzee-like jaw, but with a subhuman brain. We seem justified in concluding that in this new form discovered by Professor Dart we have a connecting link between the higher apes and one of the lowest human types. . . . While nearer to the anthropoid apes than man, it seems to be the forerunner of such a type as Eoanthropus, which may be regarded as the earliest human variety, the other probably branching off in different directions."

[1] BRITISH MEDICAL JOURNAL, SUPPLEMENT, January 17th, 1925, p. 31.

LISTER MEMORIAL LECTURE.

IT was decided at a meeting held at the Mansion House, London, in October, 1912, that the public commemoration of Lord Lister's work should consist of three parts. One is the tablet, with medallion and inscription, placed in Westminster Abbey; another is the monument erected in Portland Place, London, and unveiled in March, 1924; the third is an International Lister Memorial Fund for the advancement of surgery. In order to carry out the scheme for the establishment of a memorial fund, it was resolved at a meeting held in July, 1920, to award a sum of £500, together with a bronze medal, every three years, in recognition of distinguished contributions to surgical science, the recipient being required to give a lecture in London. At that meeting the Royal College of Surgeons of England undertook to become the trustees and administrators of the fund, and with the approval of the general committee of the fund the trust was transferred to the College, subject to certain provisions. One of these is that the award is to be made by a committee consisting of representatives of the Royal Society, the Royal College of Surgeons of England, the Royal College of Surgeons in Ireland, the University of Edinburgh, and the University of Glasgow. We announced last July that the first award of the Lister Medal, with the honorarium, has been made to Sir W. Watson Cheyne, Bt., F.R.S., who was for many years intimately associated with Lister in his work. Sir Watson Cheyne's lecture will be given at the Royal College of Surgeons, Lincoln's Inn Fields, on Thursday, May 14th, at 5 p.m.

THE first Lady Jones Lecture before the University of Liverpool will be given by Sir Robert Jones, K.B.E., F.R.C.S., on Tuesday, May 12th. The lecture was founded by Mr. John Rankin in memory of Sir Robert Jones's wife, who died a few years ago—a lady regarded with affectionate esteem by a large number of members of the profession. The lecture is to be given every third year. The subject of the first is "Crippling due to fractures: its prevention and remedy."

WE regret to learn that Sir John MacAlister has been compelled by ill health to resign the office of Secretary to the Royal Society of Medicine, which he has held since its formation some twenty years ago. The Society finds it necessary to proceed at once to the appointment of a successor. An advertisement stating the conditions and terms will be found elsewhere in this issue.

WE regret to announce the deaths of Sir Arthur W. May, K.C.B., late Medical Director-General, Royal Navy, on April 20th; of Dr. Robert J. M. Buchanan, late professor of forensic medicine in the University of Liverpool, on April 19th; and of Dr. Reginald Dudfield, medical officer of health for Paddington, also on April 19th.

TUBERCULIN TESTS IN CATTLE.

BOTH "certified" and "Grade A tuberculin-tested" milk must only be collected from cows previously tested with tuberculin and proved by this test to be "negative reactors," and therefore presumably free from tuberculosis. Relying on this guarantee the public has come to look upon these special milks as free from all danger of causing tuberculosis in the consumer, and has therefore regarded them as safe for children. That these cleaner milks are incomparably purer food than ordinary milk no one would deny who has seen the precautions with which such special milk is collected or has studied the stringent regulations which govern the production and distribution of these specially designated milks. There is no reason to doubt that the trust which the public has placed in "certified" and "Grade A tuberculin-tested" milk has been in any way unwarranted; and in view of what we are about to say concerning tuberculin tests it is well to recollect that the health of cattle used for collecting these milks is inquired into also by tests other than the injection of tuberculin. The cows are periodically examined by veterinary surgeons, the premises are regularly inspected, and a high standard of cleanliness is insisted on by the Government regulations. But the actual testing of the cattle with tuberculin, which has made the strongest appeal to the laity, has not always been regarded with the same confidence by farmers and veterinary surgeons.

Of the three methods of performing this test—the subcutaneous, the intradermal, and the ophthalmic—the first is the one which has been used most generally in this country hitherto, and it depends upon the fact that the temperature of a tuberculous cow rises to a higher level after the injection of tuberculin than does the temperature of a cow free from tuberculosis. All physicians will agree that the recording of the body temperature by means of a clinical thermometer is not such a simple feat as it sounds, and if experience is necessary in ascertaining the correct temperature of a willingly co-operating invalid, how much more skill must be requisite for determining the temperature curve of a cow at regular intervals after the subcutaneous injection of tuberculin in an ordinary cowshed?

THE TUBERCULIN COMMITTEE'S REPORT.

Veterinary surgeons and farmers have been aware of these difficulties for a long time, and in 1921 representations were made to the Ministry of Health by Viscount Astor, Viscount Elveden, and Mr. Wilfred Buckley of the urgent need for further and better investigation of the value of the familiar tuberculin tests in cattle. The Medical Research Council had previously appointed a Tuberculin Committee in 1920 to direct investigations into the methods and results of the use of tuberculin for the diagnosis and treatment of human tuberculosis, and, recognizing that the difficulties of farmers and veterinary surgeons came within the Medical Research Council's province, because of their obvious relation to medical research in tuberculosis and to the general hygiene of the milk supply, the Medical Research Council took steps to enlarge the Tuberculin Committee so as to include members of the veterinary profession and others versed in agricultural problems. This enlarged Committee set itself to inquire into the following problems:

1. It is commonly accepted that a positive reaction in cattle to the subcutaneous test implies infection with tuberculosis. In certain instances, however, in undoubted cases of tuberculosis in cattle, the reaction is either negative or doubtful. Are these discrepancies so numerous as to vitiate the general application of the test for practical purposes?
2. What are the comparative values of the different tuberculin tests—subcutaneous, intradermal, and ophthalmic?
3. What varieties of tuberculin are most efficient in the tests?
4. Can the present methods of standardizing tuberculin be improved?

On these questions the Committee has now come to some important conclusions, which are published in the Medical Research Council Special Report No. 94.[1]

This valuable document will help to place the whole question of tuberculin tests on a more secure footing. A great deal of the information included in its 195 pages is of a technical character, of interest only to those whose business it is to conduct these tests or appraise their value. We propose to give a brief account of the scope of the report and draw attention to its main conclusions.

The first part of the investigation made by the Committee was occupied with a study of the three tuberculin tests on eight herds of cattle—herds believed to be practically free from tuberculosis as well as those heavily infected. These investigations are reported in great detail, with temperature charts and figures of measurement. The next section contains an account of modified intradermal and ophthalmic tests employed in later investigations. This is followed by a report on the examination of veterinary tuberculin by Dr. R. A. O'Brien, and this by an abstract of a paper by Professor Dreyer and Mr. R. L. Vollun on a precipitin method for the standardization of "old" tuberculin and the expression of results in standard units. The final section is devoted to pathological evidence, and contains a report on the double intradermal tuberculin test performed on 114 cattle, the clinical results being controlled by *post-mortem* examination and biological tests. The results of this extensive research are tabulated in detail, and, commenting on it, the Committee observes that "nowhere in the available literature can be found a similar account of so extensive a series of tests followed by *post-mortem* and microscopic examinations combined with animal inoculations."

Turning to the conclusions of the Committee, we find that it metes out but faint praise to the subcutaneous method of testing. It says the subcutaneous tuberculin test appears to be a perfectly satisfactory test for the presence of tuberculosis in cattle when carried out under the laboratory conditions of a scientific trial. Under ordinary farm conditions it is not a satisfactory test; the discrepancies then prevailing are often so numerous as to vitiate the general application of the test for practical purposes. But if it hesitates over the subcutaneous tests, the Committee has found grounds for complete confidence in the intradermal test. "Of the different tuberculin tests the intradermal, as described in this report, appears to be superior to the subcutaneous tests, while the ophthalmic test should only be regarded as a subsidiary test." The percentage of error with the intradermal test is very small, in support of which statement may be mentioned that, in the Committee's experience, animals diagnosed as tuberculous by the intradermal test, though they had not shown tuberculosis on naked-eye examination, were nevertheless proved at autopsy to have been tuberculous, betrayed by microscopic examination of sections and inoculation of suspected tissue into guinea-pigs. It is fortunate that the intradermal tests have come out best in this inquiry, for they have many advantages over the subcutaneous tuberculin tests. Thus no temperature observations are required; the animal need not be kept at rest before and during the conduct of the test; interference with the ordinary farm routine is not required; only three observations are necessary; and the technique, although at first slightly more difficult than that of subcutaneous injection, is easily acquired. The variety of tuberculin recommended for the intradermal tests is "old tuberculin." It appears to be immaterial whether a bovine or human strain of tubercle bacillus is used in its manufacture. The tuberculin used must be of proved high potency, and should be administered undiluted for both the intradermal and ophthalmic tests.

The authoritative statements of this report will be welcomed by farmers and veterinary surgeons, and we hope that the conclusions with regard to the most reliable tuberculin tests will be brought without delay before the notice of medical officers of health and all other officials whose duty it is to watch over the national milk supply.

[1] Medical Research Council. Special Report Series, No. 94: *Tuberculin Tests in Cattle, with Special Reference to the Intradermal Test.* London: H.M. Stationery Office. 1925. 3s. net.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

RESUMPTION OF SITTINGS.

ON the resumption of the sittings of the Royal Commission on April 17th the Chairman (Right Hon. H. P. MACMILLAN, K.C.) alluded to the sudden death of a member of the Commission (Sir Thomas Hutchison), who was Lord Provost of Edinburgh in 1921-23. He said that Sir Thomas left behind him a record of conspicuous and varied public service.

LUNACY LAW AND ADMINISTRATION IN SCOTLAND.

Evidence was tendered by Sir ARTHUR ROSE, chairman of the General Board of Control for Scotland, and Dr. H. C. MARR, one of the medical commissioners. The Chairman, in welcoming these witnesses, explained that the scope of the Commission's reference did not extend to Scotland, and this evidence was being received rather for the purposes of comparison with English practice than with any view to recommendations affecting Scotland.

Sir Arthur Rose stated that the Scottish Board consisted at present of five members—two whole-time medical commissioners, two members of the legal profession, who were unpaid, and himself, an honorary chairman. In addition, there were three medical deputy-commissioners, who were not members of the board, and one of these was a woman. The distinctive feature of the Scottish system was the division of the country into lunacy districts, not quite coterminous with counties, each with its local board. The law was administered under the statute of 1857; there had been various amending Acts, but no consolidating Act, as in England. The medical commissioners took it in turns to be in attendance at the offices of the board, and each of them also visited every establishment once a year, and saw every patient. Dr. Marr here remarked that these visits were not a formality; opportunity was given for making complaints, and although many of the complaints were frivolous some quite intelligent criticisms of asylum administration had been elicited from patients.

Sir Arthur Rose went on to say that the number of registered lunatics in Scotland in 1924 was 18,266 (9,112 male and 9,154 female); of these, 2,887 were private patients, and 15,379 were rate-aided. The public asylums proper consisted of the seven royal or chartered asylums, all of them philanthropic institutions, with endowments, and 21 district asylums provided by the district boards. In Scotland there was only one private asylum (at Polton, Midlothian), corresponding to what in England was called the licensed house; it contained 54 patients. There was also one parochial asylum (at Greenock), which was really a vestige of a previous system. There were lunatic wards in 14 poorhouses, with 883 patients, and there were 1,863 registered lunatics in private dwellings. With regard to the admission of patients, the sheriff's order had to be accompanied by two medical certificates for pauper and private cases alike, but the witnesses stated that even in Scotland there was a distinction between the two classes in this respect, that in the case of the private patient two medical certificates had to be given by medical men not connected with the institution, whereas in the case of the pauper patient a medical officer of the institution might give one of the certificates. Although there was no evidence that this had ever led to any abuse, it was an anomaly, and was one of the matters noted for amendment in a future amending Act.

After dealing with the procedure on discharge, the witnesses spoke of the boarding-out system in Scotland. This, Sir Arthur Rose said, was a provision for placing in suitable homes, such as small farms, a type of case which no longer required any close medical supervision, and in which country life would be beneficial. It was required in such cases that the patient should share in the family life of the people among whom he was placed, and the deputy medical commissioners were constantly in touch with these patients, even in the most remote districts of the North of Scotland.

Observation Wards.

The witnesses were also examined on the observation wards for patients labouring under incipient forms of mental disease. Dr. Marr said that such wards were instituted by the parish council of Glasgow in 1890. The success attending the experiment was so great that in 1904 the parish council opened, in connexion with their parochial hospital, special wards for this purpose, spacious, handsome, and admirably designed, containing 25 beds for each sex. The parish councils of Govan, Paisley, and Dundee had followed the example of Glasgow. The Local Government Board (now the Scottish Board of Health) took measures for the prevention of any possible abuses or irregularities which might arise, by placing the two wards under clearly defined regulations, dealing with such questions as sufficiency of space, adequacy of medical and nursing staff, institution of registers, and duration of residence (now six months). It was also arranged that the medical commissioners of the Board should inspect and report on these wards at regular intervals. In 1923 additional wards were arranged in the general hospital at Stobhill. Dr. Marr explained that the Stobhill Hospital, Glasgow, was a Poor Law general hospital, but in its medical administration, its staff of consultants, and its apparatus for treatment, it was on all fours with a large voluntary hospital, and in these advantages the patients in the wards allotted to mental cases shared.

The Teaching of Psychiatry at Edinburgh.

The whole of the hearing on April 18th was occupied with the evidence of Dr. GEORGE M. ROBERTSON, professor of psychiatry in the University of Edinburgh and physician-superintendent of the Royal Edinburgh Infirmary, Morningside.

After giving an account of the Morningside institution, Professor Robertson mentioned that for forty-six years the institution had had the advantage of connexion with the University, and had founded the chair of psychiatry therein. The teaching of psychiatry at Edinburgh University consisted of thirty lectures a year, which all medical students for graduation had to attend, and the students were able to see the most important types of cases. In addition to the thirty compulsory lectures there was an optional course in medical psychology. He claimed that more tuition in this department was given at Edinburgh than at any other medical school in the world. Sir David Drummond remarked that he thought there were universities in England which gave a similar prominence to psychiatry. Professor Robertson said that the requirements in Sir George Newman's model course were less than the students at Edinburgh were receiving. With regard to facilities for post-graduate work, there was a diploma in psychiatry, and a certain number of graduates took it, but it entailed full-time work for six months, so that graduates tended to seek diplomas elsewhere, which were obtainable with more ease, but, of course, the Edinburgh diploma was correspondingly valuable.

The witness was next asked about certification in Scotland. He was of opinion that if it was made necessary for the second certificate to be given by a mental expert a good many patients would be saved from the asylum, granted, of course, that appropriate means were available for their treatment outside. Some argument ensued on the form of certificates, and the Chairman remarked that in the continuation certificate in Scotland no statement was made that the person was of unsound mind; the statement was merely that the person was likely to benefit from continued residence in an asylum. The Chairman also said that it was very desirable that certificates should be signed without any *arrière-pensée*, and should be such as the signatory could support in the witness-box if necessary. He had heard of formularies in religious matters being signed with reservations, but he did not like any reservations in medical certification.

Insanity as a Notifiable Disease.

Professor Robertson went on to express his dissent from the procedure of judicial intervention—the sheriff's order—on the ground that he found so many patients and their friends distressed by the necessity of proceeding to the sheriff, who was associated in their minds with the apparatus of judgement upon offenders against the law. He wished all certification to be done away with, though he agreed that some substitute for the certificate must be introduced. He thought that insanity should be treated as a notifiable disease. The fact that patients, in furtherance of their medical treatment, had to be treated at a particular institution should be notified to the authorities, whose responsibility in the matter would thereby be invoked, and he believed that sufficient protection would be afforded by such notification of detention for treatment, and by the inspection of the places in which the persons were detained and the periodical visitation of the persons themselves. He agreed with Lord Russell that this would only be certification in another form, but it would be free from some of the distressing procedure at present necessary. The fact that everybody was out to evade the formalities if possible was an indication that the formalities were inappropriate.

The Voluntary System in Scotland.

The Chairman next asked the witness for his views on the voluntary system, whereby certain patients, after a period of observation and treatment, were enabled to escape ultimate certification. Professor Robertson thought that the procedure in dealing with voluntary patients in Scotland had created something like a revolution in lunacy administration. The procedure was very simple. The patient wrote or signed a letter to the medical superintendent asking to be admitted as a voluntary patient. A letter was also sent to the Board of Control, who replied sanctioning the admission. The witness's view was that if a patient were sane enough to write such a letter he belonged properly to the category of voluntary patients. The Chairman pointed out the danger that an interested

relative might induce a patient to sign such a letter. In such a case it would be mere camouflage to describe the action as voluntary, for the patient had no power of volition. The witness said that he was aware of that danger, but the great majority of those who went in as voluntary patients appreciated their position as such, and others were quite indifferent to their surroundings so long as they were kindly treated. Forty per cent. of all private patients entered as voluntary patients. This voluntary principle was supported most decidedly by public opinion in Scotland. Indeed, there had been very little agitation in Scotland with regard to lunacy law, and there was general satisfaction with administration. Practically no cases of litigation concerning the detention of persons judged to be insane had occurred.

Mental Nursing Homes.

Professor Robertson spoke next of mental nursing homes. He had not been satisfied with the provision made for taking patients into private homes, and he took advantage of a proviso in the Scottish Act, that persons might be kept for six months in temporary residence on one medical certificate, to institute in association with Morningside and under the control of its board certain private houses for the reception of patients. The scheme had worked well; the majority of patients recovered within the six months period; in the case of those who had not recovered at the end of that time, sanction was obtained from the Board of Control for a continuation of the treatment. By some flaw in the Act there was no statutory requirement in such cases for notification to the Board of Control, although, of course, such notification was most desirable. He described these homes as part of the system of boarding out in Scotland, a description contested by Lord Russell, who pointed out that in boarded-out cases there was technically no power of detention. Mr. Micklem asked whether it was really the case that in Scotland any person might for gain take a lunatic, without a sheriff's order or the sanction of the Board of Control, and detain him for six months on one medical certificate. The witness said that that was the case, and was most anomalous, but the homes of which he was speaking, in association with Morningside, were not carried on for gain; any profits went into the funds of the institution. He would prefer all such homes to be under disinterested management.

Female Nurses in Male Wards.

The witness was next asked about the employment of female nurses in male wards. He said that in his experience such nurses had an extraordinary power of control over excited male patients, whom a male attendant might only serve to provoke. The presence of women had reduced the tendency to roughness, and had brought a new tone and atmosphere into the place. Male wards were not left entirely without male attendants, but one in each ward was generally enough. There were also certain categories of male patients for whom male attendants were advisable. But the employment of female nurses in male wards was all a part of the voluntary hospital idea which he and others in Scotland had tried to introduce into asylum administration. This was one of the ways in which the impression of an asylum as a place of detention would disappear. Another step in the same direction was the abolition of the "airing court," and, practically, of the padded room and the place of solitary confinement. Refractory patients seemed to be fewer in number in Scotland than elsewhere, and this he attributed to the enlightened ideas of treatment in vogue. For some reason there were also fewer epileptics in Scotland, the number increasing steadily as one came southward. In his own institution a certain number of wards had no locked doors at all, and no patient at Morningside was ever locked in solitary confinement. A member of the Commission asked what was done in the case of the violent patient knocking his head against the wall. Professor Robertson said that he had rarely seen the patient who gave way to continual violence; he had seen such manifestations, lasting perhaps only five minutes. On the general subject of restraint he said that a hundred years ago the large measure of restraint employed in asylum administration was mainly due to the fact that only one attendant was assigned to thirty or fifty patients. With the increase in the number of the staff the apparatus of restraint was largely abolished, with the result that the patients became more and more quiet. There was no doubt that the better treatment now given in acute manias as compared with the past was the chief reason why this disease appeared to be of a milder type than formerly. Excitement, noise, and violence among the inmates of an institution had greatly diminished. With regard to chemical restraint, he would not object to hyoscine, which was exceedingly valuable in an emergency, but should never be used continuously. He believed greatly in the effect of baths and rest in bed for patients who were inclined to be excited. The failure of doctors and nurses alike in the past was in regarding excitement in a patient as merely a symptom of the disease, to be treated by physical restraint or drugs or in any way that offered. After observation he had come to the conclusion that a great many of these cases of excitement were due to some easily ascertainable form of irritation, and if trouble were taken to find out the cause and to humour the patient the excitement would disappear. He recalled a case in a private house in which three or four nurses were holding down a struggling patient. His assistant found on inquiry that the patient had the idea that the gas taps were turned on and that an explosion was imminent. He told her that he would see to the matter; he examined the taps, and on his return reassured her, and she immediately became quiet, as she would never have done, short of exhaustion, along the lines which the nurses were pursuing. Insane persons, while their thinking often proceeded from false premisses, were quite capable of logical reasoning, and their actions were those of a normal person on such reasoning. It was well to take trouble to discover their reasoning processes; otherwise treatment by restraint, without sympathetic study of insanity, might exasperate rather than cure.

Early Mental Wards in a General Hospital.

On April 20th the first witness was Dr. JOHN D. COMRIE, senior assistant physician, Royal Infirmary, Edinburgh, who described the early mental wards, of which he is in charge, at that institution. In part his evidence repeated the statements made in his article in the BRITISH MEDICAL JOURNAL of September 27th, 1924 (p. 551), reprints of which were distributed to the members of the Commission.

Dr. Comrie mentioned that as far back as 1738, shortly after the hospital received its charter, it was recorded in the minutes that "as there is no proper place in Scotland for entertaining lunaticks the managers propose to prepare in this part of the house to be built five cells to entertain such lunaticks whose expenses their friends will defray." The present mental wards, very different from the cells there suggested, were two in number, one of 16 beds for male patients, and the other of 8 beds for female patients, with the possibility of two additional beds in either case. Asked what extension he would make if he were given a free hand, he said that he thought that 50 beds would serve the needs of Edinburgh and district. More accommodation was desirable in order that cases might be classified and noisy patients segregated. He himself visited the wards every day and saw every patient. A resident medical officer was also in attendance, but the duty of this officer included supervision of another ward as well; there was, further, a non-resident doctor who acted as clinical assistant. The nursing staff included, in addition to the sister in charge, eight female nurses and three male attendants, who were called "porters," and whose status was below that of nurses. It was at all times possible to bring in special nurses from other wards of the hospital as required. Cases were sent to these mental wards by outside doctors, a certain number came through the out-patient department of the hospital, and cases which had been treated in other wards were transferred to the mental wards on mental derangement supervening on the physical ailment. No certified cases came in; the patients were all voluntary, at all events in the same sense as patients in a general hospital, and, theoretically, they could go out at any time. In practice restraint was exercised, if necessary, in the patient's interest, in the same way as, say, in a delirious fever case, and surgical restraint (bandages) was used in the case of a patient who was inclined, say, to remove the splints from an injured leg. The wards acted as a kind of clearing house, and large numbers of patients were saved from certification. An advantage of such wards being in a general hospital was the ease with which physical conditions—infective, exhaustive, or reflex—operating as partial causes for the mental condition could be discovered and dealt with in a large proportion of the cases of confusional mental states, melancholia, and psychoneuroses. The association of mental cases with patients who were normal mentally and the greater freedom of access by the public to a general hospital than to an asylum were also important factors in expediting the recovery of the patient and establishing public confidence. The wards, in fact, took, for rate-aided patients, the place of the voluntary nursing homes available for paying patients. Dr. Comrie furnished a number of figures giving results; it appeared that about 60 per cent. of these slighter and undiagnosed cases of mental disorder might be expected to recover sufficiently to return home within a period of six weeks. In 50 per cent. of the psychoneuroses and hysteria cases with very marked mental symptoms a definite physical cause was discovered. The manic-depressive cases did not respond so well to the treatment given as did others. In reply to questions about the diminution of cases due to alcohol, Dr. Comrie said that he attributed this to the lessened consumption of alcohol in Scotland; this in its turn was due to economic reasons (lack of employment). The cases of delirium tremens showed a marked reduction. In general, the severity of such alcoholic cases as came in was not nearly so great as formerly.

Provision for Incipient Cases by Local Authorities.

The second witness was Dr. JOHN CARSWELL, who had been certifying physician in lunacy for Glasgow from 1889 to 1914, and commissioner of the Board of Control for Scotland for a number of years.

Dr. Carswell gave an account of his pioneer work in Glasgow in connexion with the treatment of incipient cases of insanity. This work started in 1889, when he suggested to the local authority that arrangements should be made for the treatment of such cases. At that time there was no systematized knowledge or study of mental disorder until patients arrived as certified lunatics at the door of the asylum, and no provision then existed anywhere for meeting the needs of such patients in the early stages of their derangement. The result was the setting up of observation wards in the hospitals of the local authority, as already described in the evidence of Sir Arthur Rose and Dr. Marr. Here cases could be sorted out before certification. The work called for great responsibility in the physician, who must keep himself informed of the views of the lunacy authorities, and must be aware of the legal pitfalls, but of the many thousands of cases which passed through his hands while he held the office in Glasgow the parish council was not required to answer a single letter of complaint. Asked whether such a scheme would not prove very difficult for rural districts, Dr. Carswell said that he did not think the difficulty was as great as was commonly supposed. In Southern England, at all events, in comparison with the conditions in Scotland, the means of communication between outlying villages and small towns were very good, and the transfer of patients from rural places to centres in which hospitals were situated should not be difficult. He emphasized very strongly the need that every person alleged to be insane or mentally deranged should be visited in his own home, if at all possible, by a special medical officer. It was very important that the patient's home surroundings as well as his actual state of mind should be investigated. The arrangement in Glasgow when he was in charge there was that, on a medical man becoming aware of such an illness in an artisan family, he reported the case to the inspector of the poor, who was under obligation immediately to communicate with him (the witness), and he at once visited the patient. It was within his discretion to send the patient to the observation wards or to remove him direct to the asylum. Persons who were homeless and had perhaps attempted suicide or shown other signs of mental disorder were notified to him by the police, and he made an examination of them in the police office. In such cases there were no court proceedings, though "disorderly conduct" might be entered on the charge sheet. He found the hospital associations and atmosphere of the observation wards conducive to recovery. More than half the cases thus treated for mental disturbance escaped ultimate certification. Under this system the sorting out of cases was done twice—originally in the visit to the homes of the patients immediately on notification, and again after they had been a short period in the institution. In reply to Mrs. Mathews, who asked whether there were any means of avoiding the intervention of the inspector of the poor, the witness replied that his own view was that the proper authority for receiving such intimations was the health authority, and on the suggestion of Sir Humphry Rolleston he promised to submit to the Commission a memorandum elaborating his view that the health authority should take the place of the Poor Law authority in this respect.

The Commission adjourned until a date in May to be announced.

Canada.

[FROM OUR OWN CORRESPONDENT.]

PUBLIC SUPPORT FOR MEDICAL RESEARCH.

IT is a welcome sign of the times that the laity is becoming alive to the benefits to be derived from concentrated study of the elusive problems of certain diseases. The medical research committee of the University of Manitoba, Winnipeg, has recently received a gift of two thousand dollars apiece from eight business men of that city. At the laboratories of the medical college investigations upon the chemistry of the blood will be supported by these funds, and at the general hospital certain blood diseases, especially pernicious anaemia and the leukaemias, will be studied. The research committee hopes to link this fund up with the Gordon Bell Memorial Fund which was established last October, when twenty thousand dollars were set aside.

IODINE AS A PROPHYLACTIC OF GOITRE.

Goitre has for some time been very prevalent amongst animals and human beings in the Pemberton Meadows district of British Columbia. Dr. W. D. Keith, who undertook to investigate the subject, published a report on his investigations in the *Journal of the Canadian Medical Association* a year or so ago. The results of feeding iodine to cattle were very gratifying. Mr. John Ronayne of this district carried out the experiment and has shown that the total cost of the iodine required for one hundred head of cattle, twelve horses, two hundred chickens, and a number of other domestic animals was only two dollars a year.

CONFERENCE ON MEDICAL SERVICES.

A conference on the medical services in Canada, arranged by the Canadian Medical Association, with the approval of the Hon. Henri Beland, Minister of Health for Canada, was held in the House of Commons, Ottawa, last December. A report of the papers read and of the discussions they provoked is published in the March issue of the *Journal of the Canadian Medical Association*. The chairman of the conference was Dr. Alexander Primrose, C.B., of Toronto University.

Medical Licensing in Canada.

Among the subjects dealt with was that of "Medical licensure in Canada." This has been a very knotty problem for many years. In Canada the licensing of medical men is a function of each individual province, and time was when practically no reciprocity existed amongst the provinces. Through the determined effort of the late Sir Thomas Roddick, M.D., an Act was passed in the Dominion House creating a Medical Council of Canada in 1912; it was a step in advance, but still conditions are not entirely satisfactory. At the present time the young man who has obtained his medical degree in Canada has a choice of two methods of obtaining his licence. He may sit for the professional examinations of the province in which he wishes to practise, as the greater number of graduates still continue to do; or he may, upon presentation of an "enabling certificate" from the registrar of any province that he has fulfilled all the requirements of that province as to preliminary and medical education, sit for the examinations of the Medical Council of Canada. In the first case he can register only in the province in which he was examined; in the second he is nominally entitled to licence in any province. Actually, however, only eight of the nine Canadian provinces fully accept the examinations of the Dominion Council (as it is loosely called). Quebec, ever jealous of its rights and privileges, maintains that the Dominion examinations may properly be taken only after *all* provincial conditions for licensure have been fulfilled, and refuses to give an "enabling certificate" to the graduate of any medical school in the province of Quebec unless he has (1) fulfilled all of the provincial requirements as to preliminary education, (2) been on the provincial register as a medical student for five years, and (3) passed all of the provincial licensing examinations, which extend over a period of five years. Furthermore, graduates of these schools who belong to other provinces where they have registered and who wish to obtain a licence in Quebec by reciprocity, are allowed to do so only when they have passed the examinations of the Medical Council of Canada, after having previously passed the professional examinations of their own province. In contrast to Quebec, British Columbia has abolished its own provincial examinations, and grants licence only to those graduates who have passed the Dominion Council. Were all of the provinces to adopt this procedure the difficulties of Canadian licensure would pass away. There is still another way of obtaining a licence to practise in a province of Canada, for all the provinces, except British Columbia, have, since the war, entered into reciprocity with the General Medical Council of Great Britain. The prospective licentiate can enter into the promised land by a circuitous route. He can avoid the examination of the Dominion Medical Council by sending to Great Britain his certificate of provincial registration,

together with a fee, and obtain British registration and then register in any province. There are, however, four exceptions: (1) British Columbia, as stated above; (2) Saskatchewan, where the Medical Act has been changed so that it grants medical registration only to those registered by passing the examinations of the General Medical Council of Great Britain—query, is there such an examination? (3) New Brunswick, which does not allow reciprocity with Great Britain unless proof be given of bona-fide residence in that country by those possessed of a certificate of British registration; and (4) Quebec, which will not grant reciprocity through Great Britain to the graduate of any medical school within its province. The question produced a lively and very interesting discussion at the conference.

Public Health and Medical Education.

Dr. John W. S. McCullough, Chief Officer of Health for Ontario, in his address, "The greatest public health need of Canada," pleaded for full-time local health officers; in this country, outside the large cities, there is no completely satisfactory organization for carrying on public health work in an efficient and economical way. The need was much felt last year in one district of Ontario during a small-pox outbreak. In British Columbia the provincial medical association has been investigating the question of health insurance, facts about illness amongst workmen have been collected, and statistics of accidents have been drawn up. Dr. J. H. MacDermot of Vancouver outlined in his paper what had been done, and stated: "We in British Columbia do not think that the medical profession should strive to inaugurate any scheme, but that we should educate ourselves thoroughly with regard to all its advantages and disadvantages and remain receptive, but ready to meet any situation that may arise." The physicians of British Columbia are educating themselves for any eventuality such as a proposal of the Provincial Government to draw up a plan for general health insurance. Perhaps the topic in which the greatest interest was shown at the conference was medical education. Never before, probably, was there so much talking about this subject as there has been in recent years in Canada and the United States, and it is still going on. Professor J. J. R. Macleod, of the University of Toronto, and Dr. C. F. Martin, Dean of the Faculty of Medicine, McGill University, read good papers on the subject. In Toronto certain optional courses may be taken by the medical student. It was the general feeling of the conference that a certain minimum amount of time must be allotted for each subject, yet the curricula of all the medical schools should not be exactly the same, and each medical school should be allowed scope to develop its own individuality. It was also felt that the student must not be "stuffed" during every hour of the day, but should be left some time to think.

If one who has seen something of medical education on both sides of the Atlantic be allowed to express an opinion, I should say that in Canada the medical student does not show that he has had as good a general education from his earliest years up as does the English student. Dr. J. C. Connell, Dean of the Medical Faculty, Queen's University, Kingston, felt that some of the medical schools of Canada had not been quite fairly dealt with by the Council on Medical Education of the American Medical Association in their classification of medical schools. Apparently, in one instance, on the issue of a second report a school was retained in "Class B" without a reinspection having been carried out.

TRAINING OF PUBLIC HEALTH NURSES.

The University of Montreal has instituted a post-graduate course for the training of public health nurses. The school is to receive financial aid from the province of Quebec and also from the city of Montreal. All nurses on the city's staff are to receive training free of charge. The civic authorities have placed two of the most populous parishes, St. Catherine's and St. James's, at the disposal of the school. Here the problems of infantile mortality, tuberculosis, children's diseases, and maternity, and of hygienic conditions generally, will be closely studied, and annual reports will be drawn up to demonstrate to these districts the value of properly guided public health nursing.

New South Wales.

[FROM OUR OWN CORRESPONDENT.]

PROFESSOR JOHN IRVINE HUNTER.

THE members of the New South Wales Branch of the British Medical Association met at the British Medical Association Building, Elizabeth Street, Sydney, on December 18th, 1924, to pay homage to the memory of John Irvine Hunter. Dr. Andrew Davidson, President of the Branch, said: "We have met this evening so that we may place on record our deep sense of loss in the untimely death of Professor John Irvine Hunter. He was a great scientist. His industry was invincible. He was a genius with an infinite capacity for taking pains. He had the power to put anatomy on a sure foundation, and thus gave to the study of surgery and of pathology their true place. He loved his work, and in his incessant industry laboured as if life were too short (as it proved to be) for the work he had to do. His life was a sacrifice to science. 'Out of his work, out of his discoveries came, and will come, health and safety and length of days and delivery from pain.' His earnest aim and intense and beautiful character made him to all of us a guide, philosopher, and friend." Professor A. E. Mills (Dean of the Faculty of Medicine, University of Sydney), Professor F. P. Sandes (Professor of Surgery), and Dr. F. A. Maguire (acting Professor of Anatomy) all spoke, and a letter was read from Dr. J. W. Dunbar Hooper, the President of the Victorian Branch.

DR. SYDNEY JAMIESON.

Dr. Sydney Jamieson, who had been associated for many years with the work of the Sydney University and the Sydney Hospital, died on January 25th. A disorder of the heart had troubled him during the last six months, but he continued to attend his patients until two days before his death. Dr. Jamieson was born in London sixty years ago. With his people—his mother is still alive—his first home overseas was in Tasmania, but he received most of his early education in Sydney, where he attended the Sydney Grammar School, the Hurlstone College, and graduated in arts at the University of Sydney. With a reputation as a footballer and cricketer, he went to Scotland in 1884, and four years later took the degrees of M.B., M.Ch. in Edinburgh. On his return to Sydney, in 1891, he was appointed assistant physician at the Sydney Hospital, and gradually advanced through various stages of the honorary staff until, when he retired about 1918, he had completed twenty-eight years' service. He established at the hospital the department of pathology, which has now become a most important adjunct. He had acted for a period as demonstrator of pathology under the late Professor Greenfield in Edinburgh.

WELFARE OF MOTHERS AND BABIES.

The success of the work of the Royal Society for the Welfare of Mothers and Babies has rendered the extension of the Mothercraft Centre at Petersham imperative, and additions have been made at a cost of £1,000. The new wing was opened by the Minister for Health on December 6th, 1924. In the last three years, since the inception of the work, the institution has treated 5,100 out-patients and babies and 700 in-patients. About 160 nurses have been trained for this class of work; among them are the matron of the King Edward Hospital, Perth, and the matron of the Adelaide Baby Clinic Health Centre. The Government of New South Wales has made it a condition that all nurses employed in the State baby health centres must have the additional qualification of a post-graduate training at the society's institution. The baby welfare centres at Woolloomooloo and at Surrey Hills are doing excellent work, and the free distribution of milk from these centres has had an excellent effect upon the children. The forty-eight health centres now in operation cost the Government £22,000 a year. The Country Women's Association and the Bush Nursing Association are co-operating in the movement, and at the request of the Bush Nursing Association Bush nurses will be trained free of cost.

NURSES' REGISTRATION ACT OF NEW SOUTH WALES.

This Act, which recently received Royal assent, provides for the registration of general, mental, and obstetric nurses; it prescribes a period of training of not less than three years for the two former and of six months for the latter. The constitution of the Nurses' Registration Board is:

The Director-General of Public Health.
The Inspector-General of Mental Hospitals.
The principal teacher of obstetrics in the University of Sydney.
One legally qualified medical practitioner, who shall be nominated by the New South Wales Council of the Australasian Trained Nurses' Association.
Three nurses, two of whom shall be nominated by the New South Wales Council of the Australasian Trained Nurses' Association.

A ROYAL COMMISSION ON NATIONAL HEALTH.

A Royal Commission on National Health has been appointed, consisting of Sir George Syme, K.B.E., M.S., F.R.C.S., Dr. Frank S. Hone, Dr. R. H. Todd, Dr. Jane Stocks Greig, and the Hon. S. R. Innes-Noad, M.L.C. It is instructed to inquire into the following matters:

(*a*) The co-ordination of medical services of Commonwealth departments in regard to all matters affecting public health.
(*b*) The co-operation of Commonwealth and State health authorities.
(*c*) The prevention of the outbreak, development, or spread of disease in the Commonwealth.
(*d*) The prevention of venereal disease and the exercise of control and the treatment of persons suffering from venereal disease.
(*e*) Uniform legislation with regard to purity of food and drugs.
(*f*) Maternity hygiene and child welfare.
(*g*) Industrial hygiene.
(*h*) The encouragement and development of research work.
(*i*) The relationship which should exist between public health authorities and other public authorities rendering medical services.
(*j*) The relationship which should exist between public health authorities and medical practitioners in regard to the prevention of disease.
(*k*) The publication of information relating to matters concerning public health.

India.

GRANT MEDICAL COLLEGE, BOMBAY.

ON March 16th the Governor of Bombay unveiled at the Grant Medical College a portrait of Sir Temulji Nariman, one of the oldest medical practitioners in Bombay, who has taken a very keen interest in the growth and extension of the College, with which he has for many years been closely associated. He was educated at the College and at Edinburgh, obtaining the diplomas L.R.C.P., L.R.C.S.Edin., L.R.F.P.S.Glas., and L.M. in 1895. In 1909 he was vice-president of the Bombay Medical Congress, and received the Kaisar-i-Hind gold medal. In 1922 he obtained the honorary diploma of M.R.C.P.Edin., and was President of the College of Physicians and Surgeons at Bombay in 1923. He is honorary physician to the Parsee Lying-in Hospital, and examiner in midwifery and diseases of women in Bombay University, and a justice of the peace for Bombay. He received the honour of knighthood in 1914. The Governor paid a tribute to the Bombay municipality for the assistance rendered to the College in enlarging the scope of training in midwifery. He expressed surprise that up to the present no dental hospital or centre for teaching dentistry had been founded as part of the College.

KASHMIR MEDICAL MISSION.

During 1924 the pressure of work at the Church Missionary Society's Hospital in Srinagar, Kashmir, continued undiminished; there were 18,762 new out-patients and 1,994 in-patients, and 5,501 operations were performed. The new *x*-ray outfit, towards the cost of which the Countess of Reading contributed generously, has been of particular value. The financial position is less satisfactory than in previous years, partly owing to the loss of income due to the new Kashmir State arrangement, by which a directorship of medical services has been created and a whole-time residency surgeon appointed to Srinagar. It was necessary to withdraw money from invested funds in order to balance expenditure. The hospital serves a population of some three and a half millions, and, since Kashmir is on the main line of communications to Central Asia and Tibet, representatives of many frontier tribes are frequently passing through. The Leper Hospital in connexion with the mission was built in 1891, on a peninsula jutting into the Dal Lake, and during the last year received 215 in-patients, 147 surgical operations were performed, and 187 injections of ethyl esters given; the more serious surgical operations were performed in the Mission Hospital. A new children's home is being erected, a grant of Rs. 25,000 having been sanctioned; it will consist of a central house for the nursing superintendent, and two wings, one for boys and one for girls.

MEDICAL TREATMENT IN BOMBAY VILLAGES.

The Bombay Government is endeavouring to provide some form of medical relief for the people in the smaller villages in the Presidency, comprising a population of six millions. In the smaller villages, where it would be financially impossible for a medical practitioner to settle, the Government intends to train village schoolmasters in the rudiments of medicine and surgery. Experimental schools have been opened already in Poona and Bijapur, five schoolmasters receiving elementary instruction in each place. The training is to last for two and a half months, and the schoolmasters will then be paid 10 rupees monthly for the whole of the village health. A second scheme is contemplated which will induce medical practitioners to settle in the smaller towns and larger villages, by offering a bonus for the initial settlement and also a monthly allowance.

Scotland.

EDINBURGH CAMPAIGN AGAINST DIPHTHERIA.

IN a lecture on the prevention of diphtheria given by Dr. M. T. Benson, assistant medical officer of health, Edinburgh, under the auspices of the Leith Parents' Association, he described the preventive work carried out among Edinburgh school children during the course of the last year. Twenty-six schools were visited, and the public health authority had given to the parents of over 11,000 school children under 10 years of age the opportunity of having their children examined by the Schick test, and, if found necessary, subsequently immunized against diphtheria. The percentage of parents consenting had ranged from 11 to 86 at different schools. In the aggregate the Schick test was applied to some 4,500 children; almost 3,000 were found to be susceptible to diphtheria, or roughly 65 out of every 100 school children between 5 and 10 years of age. Of children between 1 and 5 years of age who were tested, 80 per cent. on an average were found to be susceptible to the disease, and in certain groups of children under 5 years of age as many as 95 per cent. This early age was the time at which the great majority of children were apt to contract diphtheria if brought in contact with it, and this also was the age at which diphtheria, if it was contracted, was most dangerous; more than 60 per cent. of the total deaths from diphtheria in Edinburgh occurred in children under 5. In performing the test three injections of a special toxin-antitoxin mixture were given under the skin of the arm at intervals of a week. Though three injections were necessary, they did not upset young children, and Dr. Benson had not seen an instance of a protective injection followed by any unduly severe or permanent ill effects, after personal experience of over 10,000 injections in Edinburgh. In one school 430 children between 1 and 11 years of age had been treated from January to May, 1924, and in the subsequent period of fourteen months one case of diphtheria had occurred in a highly susceptible child, who, it was noted, did not develop protection after the ordinary course of three toxin-antitoxin injections, and an extra protective injection had been given. The attack was extremely mild, and he thought this good result could be reasonably credited to the protective treatment the child had undergone. In some 120 children under 11 years of age at the same school who had not been treated, no fewer than

five cases of diphtheria, of which three had been very severe, occurred during the same period of fourteen months. According to this proportion eighteen cases might have been expected among the 430 treated children, instead of the one very mild case which had actually developed. He suggested, therefore, that children should be protected as soon as possible after they were 9 months old. Dr. William Robertson, M.O.H. for Edinburgh, said that the Public Health Department of the city of Edinburgh might take credit for having pioneered the system of protection against diphtheria in this country, and he desired to thank the Leith Parents' Association for the enlightened and intelligent support given to the movement. He was satisfied that diphtheria could be prevented if children were treated with doses of toxin-antitoxin, and for that reason he asked for the further co-operation of the public.

STUDENTS' HELP FOR SCOTTISH HOSPITALS.

The students of St. Andrews University on April 11th made a special effort to help the funds of Dundee Royal Infirmary by organizing a fancy dress parade in the university town. As the result they were able to hand over to the hospital about £400. On the same day Glasgow students held a students' day at Ayr on behalf of the Ayr County Hospital. Earlier in the week a concert had been held in the Town Hall and a magazine had been sold in the streets; £500 was realized on behalf of the hospital, of which £200 was collected in coppers. On the same day also a students' day was held at Kilmarnock on behalf of Kilmarnock Infirmary, the methods adopted being very much the same as those adopted at St. Andrews and Ayr, with a fancy dress carnival held in the evening in the Agricultural Hall, attended by over 1,000 persons. The total amount realized at Kilmarnock was over £630.

LETTERS OF MARY QUEEN OF SCOTS.

In the JOURNAL of November 22nd, 1924, it was mentioned that a sum of £2,250 was necessary to secure for the Scottish National Library an important series of thirty letters and papers connected with Mary Queen of Scots, and that a fund had been opened under the patronage of the Duchess of York for their purchase. A sum of only £120 is now required to complete the purchase price. The letters will form a valuable addition to the many important documents already in the possession of the Scottish National Library dealing with this subject. Subscriptions may be sent to Dr. C. Stewart Black, 93, High Street, Paisley.

Ireland.

IRISH MEDICAL COMMITTEE.

A MEETING of the Irish Medical Committee, held in the Royal College of Surgeons, Dublin, under the chairmanship of Dr. Joseph Power, was attended by Drs. J. M. Day, M. R. J. Hayes, J. T. Elliott, J. C. King, W. W. Murphy, H. G. Roche-Kelly, J. O'Meara, E. T. King, C. Eccles, D. Morrissy, D. H. Donovan, Mary S. P. Strangman, J. P. Shanley, J. H. Counihan, R. J. Rowlette, George Maguire, T. J. Farrell, A. D. Courtney, T. Hennessy (Medical Secretary), and C. H. Gick (Secretary). Apologies were received from Senator W. O'Sullivan, M.D., Drs. T. B. Costello, H. T. Warnock, and H. Raferty.

Medical Registration.—A letter was read from the secretary of the Ministry of Local Government inviting the Irish Medical Committee to nominate three delegates who, with representatives of the medical licensing bodies, were requested to meet the Minister in a conference with regard to arrangements for the future control of the medical profession in the Free State. Drs. Power, Rowlette, and Hennessy were selected to represent the Irish Medical Committee, and were instructed to urge the continuance of the existing arrangements for medical registration. In the absence of Dr. Power, Dr. M. R. J. Hayes was appointed substitute. Resolutions were read from the Undergraduates' Association in the University Colleges of Cork and Galway requesting that the Committee should oppose any change in the existing system of medical registration in the Free State.

Motor Car Taxation.—It was proposed that the tax should be on petrol, subject to 50 per cent. reduction for medical practitioners. An amendment that the tax be upon horse-power, subject to 50 per cent. reduction for medical practitioners, was lost by 6 to 8, and the original proposition carried by 8 to 6.

Registration of Births, Deaths, and Marriages.—Arising out of a discussion with regard to the new quarterly Form S in connexion with births, deaths, and marriages, it was unanimously resolved:

> That we consider the new quarterly Form S, issued by the Registrar-General, as entailing a great deal of additional work, and, in view of the already inadequate remuneration, we request the Registrar-General to take the necessary legislative steps to have the fees for the registration of births, deaths, and marriages increased to three shillings for each entry.

Scales of Medical Salaries.—The refusal of the County Mayo Board of Health to accede to the request of the Minister of Local Government and Public Health to fix a scale of salaries for its medical officials was discussed at length, and it was resolved:

> That the Minister of Local Government and Public Health be requested to exercise his powers to fix a scale of salaries for the County Mayo medical officers at the same rate as exists in the County Galway.

Temporary Duty.—Owing to the frequent disputes arising in connexion with remuneration for holiday duty, resulting in medical officers being deprived, in many instances, of their annual holidays, the Committee requested that the Minister of Local Government and Public Health should fix the remuneration as follows:

> (*a*) For dispensaries £7 7s. a week, (*b*) for district and county hospitals a minimum of £5 5s. a week, and, in all cases, not at a less weekly rate than the yearly salary.

County Hospitals.—With regard to county hospitals, the following resolutions were passed: (*a*) That the minimal salary for a county hospital surgeon be £1,000 per annum; (*b*) that the county surgeon should be permitted to engage in consultative practice only; (*c*) that in both county and district hospitals patients only for whom the State is statutorily responsible should be admitted for treatment; (*d*) that if private patients are admitted they should be treated in a hospital apart from those entitled to treatment by the State, and that their private medical attendants should have the right to attend such patients with the county surgeon.

Salaries of Whole-time Medical Officers.—The Committee resolved that the salaries of county medical officers of health, tuberculosis medical officers, and medical inspectors of schools should be on the scales adopted by the British Medical Association for Great Britain, and that where lower salaries are offered the medical journals be requested not to advertise the posts.

Committee on Reform of Medical Services.—The Committee expressed its disappointment at the delay in publishing the interim report of the Committee of Inquiry into the reform of medical services, especially in view of the unsatisfactory condition of the medical services in the Free State and the temporary arrangements made for the medical certification of sickness benefits under the Insurance Act.

Amalgamation of Dispensary Districts.—The Committee expressed a strong opinion that the population of the dispensary districts in Cork City are already too big for efficient medical attendance on the sick poor, and, in the circumstances, condemned the proposals for their further increase by amalgamation.

Medical Members of Dail and Northern Parliament.—The Committee resolved unanimously as follows:

> That Drs. R. J. Johnstone (Chairman, Irish Medical Committee) and Dr. Hugh Morrison be congratulated on their election to the Northern Parliament, and Dr T. Hennessy (Irish Medical Secretary) on his election to the Dail.

England and Wales.

BEDFORD COUNTY HOSPITAL.

AT the annual meeting of the Bedford County Hospital Guild on April 7th the possibility of providing a maternity department in the hospital was discussed; such a department would include a pre-natal clinic, observation, isolation, and lying-in wards, and an operating theatre. An address was given by Dame Janet Campbell, M.D., senior medical officer at the Ministry of Health for maternity and child welfare work, who dwelt on the need of better hospital facilities for maternity cases. Local authorities had already established about 120 maternity homes, chiefly in adapted buildings, but it would not be satisfactory for a new welfare service to develop out of connexion with the ordinary established hospitals. The Ministry always preferred to work in conjunction with such hospitals, and financial grants were obtainable. In the course of the meeting it was announced that the Bedford County Hospital Guild had already raised a sum approaching £2,000 in aid of the hospital. It had given active support to the work of providing a convalescent home and paying wards, and was at present concerned in helping to furnish the new nurses' home. The balance sheet showed that the house-to-house collection in Bedford during the past year had resulted in a sum of £618 being raised—£14 more than in the previous year.

RICKETS AND TEETH DEFECTS IN SHEFFIELD.

A lecture was given on March 26th in the University of Sheffield, on the invitation of the Sheffield Local Medical and Panel Committees, by Professor E. Mellanby, F.R.S., on "Can rickets and defective teeth be eliminated from Sheffield?" At the outset the lecturer pointed out his pleasure in giving some account of the work, and result of the work, carried out at the university field laboratory, for whose establishment the panel doctors of the district were partially responsible. He then described by means of lantern slides the experimental work on animals whereby the antirachitic and the rickets-producing effects respectively of different foodstuffs had been determined. It was shown that the antirachitic foodstuffs were rich in vitamin A, and that in fact this action depended largely on the presence of an antirachitic vitamin, which had many properties and a distribution very similar to vitamin A. Cod-liver and fish oils, milk, suet, butter, eggs, and cheese were antirachitic, especially the first of these. The antirachitic effect of butter was enhanced by the presence of calcium salts. He referred also to Huldschinsky's work, and showed that the ultra-violet light need not necessarily be applied to the skin, but that its direct application to some foodstuffs increased their antirachitic effect. Thus, the antirachitic action of milk was increased by exposure to a mercury-vapour lamp.[1] The rickets-producing effect of cereals, most potently seen in the case of oatmeal, could be antagonized either by antirachitic vitamin in the diet or to a less extent by exposure of the animal or the oatmeal to the ultra-violet rays. Much of the lecture was occupied in giving an account of Mrs. Mellanby's work on the dietetic and other conditions which control the formation of perfect and imperfect teeth. Her work showing the relation between the formation of children's teeth and their susceptibility to caries was also described; also the investigations, undertaken with the co-operation of C. Lee Patterson and W. Proud, in which it was shown that the incidence and rate of development of caries in children could be controlled by altering their diet, were described. Professor Mellanby urged the medical men present to make use of the facts experimentally demonstrated in the feeding of children, and endeavour thereby to eliminate the appalling condition of dental and bone defect, so extensively found in this country. At the close of the lecture there was an interesting discussion, in which Drs. Mackinnon, A. E. Naish, Turner, A. E. Barnes, R. Hallam, and others took part. Professor Mellanby, in his reply, stated the superiority of a good 50 per cent. emulsion of cod-liver oil over oil and malt, which usually contains about 10 per cent. oil. Oatmeal when taken with abundant milk or with fat fish could give excellent results, but oatmeal without such substances was detrimental. Dr. Forbes in a happy speech proposed a vote of thanks to the lecturer, and this was seconded by Dr. Lucy Naish.

[1] See S. J. Cowell: Irradiation of Milk and the Healing of Rickets, BRITISH MEDICAL JOURNAL, March 28th, 1925 (p. 594). See also Cereal Foods as a Factor in Rickets, BRITISH MEDICAL JOURNAL, April 11th, 1925 (p. 704).

BIRMINGHAM EXHIBITS AT WEMBLEY.

Three scale models at the Wembley Exhibition this year will illustrate the latest developments of the treatment of tuberculosis in Birmingham. One model represents the artificial light treatment block at Yardley Road Sanatorium; a second, one of the open-air wards in the same institution; and the third, one of the open-air classrooms at Uffculme. The first model, which measures 5 ft. by 4 ft., shows two treatment and subsidiary rooms, including a power house with a working model of a dynamo; each room in the model is electrically illuminated. The models have been constructed by Mr. Raymond T. Cooke, the manager of the public health departments works, to the scale of one inch to the foot, and are complete in detail.

Correspondence.

WHAT IS AN EYE SPECIALIST?

SIR,—I am much obliged to you for the very friendly notice of my pamphlet entitled *What is an Eye Specialist? or the General Medical Council and Ophthalmology*, which appeared in your issue for March 28th (p. 618). Perhaps you will allow me just to make one or two observations. I admit at once that your article is a very fair one except on one point, and that is as to the responsibility of the General Medical Council. It seems to be assumed in your article that the General Medical Council is in no way responsible and that the responsibility rests on the Government. Are we to understand from that that if the General Medical Council finds something wrong, it feels precluded from approaching the politicians with the view of giving them advice? Was the General Medical Council too supine, or did it refrain simply because it was afraid that the statesmen and politicians would pay no attention to it? Are we also to understand that when statesmen contemplate new legislation about medical matters they think so little of the General Medical Council that they do not ask its opinion? Did the statesmen, of their own accord, insist upon diplomas in public health and special diplomas in dentistry, or were they approached to do so by the General Medical Council or other medical authority?

Now as regards the very favourable view of school testing taken in the article. I regret extremely that I cannot just see eye to eye. Are the eyes of all the children in the schools examined by the ophthalmometer and under a mydriatic? Without such precautions the examination of the eyes of young children is of very little value. I have known children pass a so-called eye examination at school with hypermetropia ranging from 4 to 6 dioptres. My own case, quoted in the pamphlet, would have passed as all right, for I had 6/6 vision, and yet I have 2 dioptres of hypermetropia and nearly the same amount of astigmatism. Up to the age of 24 I had still 6/6 without glasses, but only read with very great trouble. The rough testing of the children in some schools with which I am acquainted is done by the teachers at the rate of 150 children to the hour. Only those who come down in this perfunctory examination are referred to special practitioners.

As an example of what may happen: a patient at a well known eye hospital got a prescription, spherical +0.75 for each eye. The real reading was, in one eye spherical +2 cylinder +2.5 axis horizontal; in the other eye it was spherical +2, cylinder +1.5 axis horizontal, and the prescription of +0.75 for a case like that was initialed by a full surgeon to that hospital, and a gentleman who is generally looked upon as an authority on school eye testing.

I have no wish to repeat the argument of my pamphlet.

It is now on the market and copies can easily be obtained, but I think my contention is not wrong that if public money is going to be spent in large amount on eye testing, then every precaution should be taken that the persons who receive this money give value for it, and that in optical work they have the same thorough training that opticians have. That a certain number of persons practising as eye specialists practise without such a training is entirely the fault of the General Medical Council. I have no desire to hinder anybody practising ophthalmology if they wish, but when they are going to be paid by the State then ample means should be taken to see that they are value for the money spent upon them.

Again thanking you for the courtesy of your article.—I am, etc.,

Glasgow, April 14th. ANDREW FREELAND FERGUS.

TREATMENT OF DIABETES BY RAW FRESH GLAND (PANCREAS).

SIR,—Recent observations have suggested that insulin contains two fractions, one of which is concerned with the utilization of sugar by the tissues, and the other with glycogen deposition. This, it seems to me, very possibly provides the explanation of the divergent results of the treatment of diabetes with raw fresh pancreas, reported in your columns recently, and also experienced by previous experimenters since Cowles described his original success with the method in 1911 (*Boston Med. and Surg. Journ.*, 1911). Experiments upon which Mr. Howard and I have been engaged for over a year past have shown that the glycogenetic fraction is less readily inactivated by the digestive ferments than the sugar-utilizing portion, so that when insulin is given by the mouth this fraction may, under suitable conditions, exert its effect on carbohydrate metabolism, although the sugar content of the blood does not fall as it does when insulin is given subcutaneously. If, therefore, fresh pancreas, or a preparation containing insulin, is administered orally in a case of diabetes where the hyperglycaemia and glycosuria are entirely, or almost entirely, dependent upon defective storage, it may have a beneficial effect, but when there is defective sugar utilization such a method of treatment will be of little or no use. My clinical experience with various preparations of pancreas has tended to confirm these conclusions, and demonstrated that in suitably selected cases oral administration has a distinct place in the treatment of diabetes, but the type of case, the age of the patient, and the functional activity of the digestive apparatus, among other factors, influence the result, and indiscriminate reliance upon either fresh pancreas or preparations of the gland is, I believe, likely to lead to disappointment, and maybe to disaster, in many instances.—I am, etc.,

London, W.1, April 18th. P. J. CAMMIDGE.

CHRONIC CYSTIC MASTITIS.*

SIR,—Sir G. Lenthal Cheatle has discussed the most interesting problem among the many concerning diseases of the breast (BRITISH MEDICAL JOURNAL, January 3rd, 1925, p. 5). Striking features of the so-called chronic (cystic) mastitis, which Cheatle would call epithelial hyperplasia, are the numerous names which have been employed for it and the different opinions as to its relation to cancer. My studies of this breast lesion during a period of thirty years, and among almost 5,000 cases, lead me to conclude that chronic cystic mastitis (hyperplasia or abnormal involution) is a reaction of both the epithelial and connective tissue cells of the breast to some type of local or general irritant, the tendency of which is to a spontaneous return to normal. Cysts, single or multiple, are the most common end-results of the lesion, but even the cysts, which produce one or more palpable lumps, usually disappear. The disappearing tumour of the breast is a well recognized clinical fact. The older pathologists and surgeons never observed any of the types of chronic cystic mastitis except resultant simple or multiple cysts of long duration. Convincing evidence that chronic cystic mastitis usually disappears spontaneously is afforded by the records and specimens in the surgical laboratory of the Johns Hopkins Hospital.

During my first ten years of association with Professor Halsted (down to 1900) the average duration of the lump in the breast was more than one year, and 80 per cent. of the tumours were cancer and 20 per cent. benign. Among these benign there were a few examples of cystic breast, single or multiple, and one or two of the non-cystic type of chronic mastitis. With each decade since 1900 the average duration of the lump in the breast has grown less, and the proportion of all types of chronic cystic mastitis increased rapidly. Since 1920 chronic cystic mastitis among patients who seek advice within one month after feeling the lump has become almost the most frequent lesion, and we are learning to recognize it clinically and not subject all the patients to operation.

The diagnostic problems in conditions of the breast have changed. When women wait until the lump has been present more than nine months, diagnosis is less difficult. Many of the benign lesions have disappeared, leaving cancer or the definite benign encapsulated adenoma or the rare benign cyst. During my first ten years' experience, on only a few occasions have we a record of a woman in whom a definite lump could not be palpated. Since our educational campaign in America women no longer delay. In my own clinic, since 1920, more than 50 per cent. of the women examined because of some breast complaint were not operated upon. We have found "lumpy breasts" of different types—those in which the multiple lumps are indefinite, and others with multiple definite lumps. When these cases have been submitted to operation in the past, as a rule some form of chronic cystic mastitis has been revealed.

The first important fact for the general practitioner is that there is a lesion of the breast which may produce pain, single or multiple lumps, with or without pain or tenderness, and discharge from the nipple, symptoms which as a rule did not influence the uninformed woman to seek the advice of a doctor; and in the majority of these cases all the symptoms disappeared. Now that women are becoming well informed, the majority (of the informed) seek medical advice for pain, discharge from the nipple, tenderness, and for indefinite single or multiple lumps, as well as for a definite single lump.

In my own clinic the number of breast cases in which it has been concluded that operation was not indicated has gradually increased. In 1921 the percentage of this group was 50, in 1924 almost 60. These women, because of the educational campaign, have come for examination at once. The "lumpy" breast, the "shotty" breast, and the dilated ducts beneath the nipple, form the larger proportion of this group, and as I have examples of all these types of breast in the laboratory, I know that the multiple indefinite lumps are due to chronic cystic mastitis or Cheatle's epithelial hyperplasia.

The recent report of Dr. Janet E. Lane-Claypon of a study of the results of 20,000 operations for cancer of the breast shows that the permanent cure depends upon two factors—the duration of the lump and the completeness of the operation. For early lumps, without gland involvement, the percentage of five-year cures varies from 70 to 80; in later cases with glands involved it falls to 15 to 20, and lower.

To-day the surgery of cancer of the breast is established, and most surgeons perform a faultless complete resection, but in most communities women still delay for the lump to disappear. Only among informed women do we see chronic mastitis as a very common lesion, and cancer in a very early curable stage. It is important for all members of the medical profession to become familiar with these clinical conditions of the breast which are brought to notice in very large members by any continuous educational effort. When palpation finds a definite single lump the problem at once becomes surgical and pathological. If the patient is over 20 years of age she should be sent to a hospital at once and the involved breast prepared as for the complete operation.

The majority of surgeons—surgical pathologist and pathologist—find little difficulty in recognizing, from gross and

* Abridged.

frozen section, the encapsulated adenoma, the simple (blue-domed) cyst, and carcinoma, but when the area is not encapsulated, and not typical of cancer, confusion creeps in. In this group of non-encapsulated area without the definite gross and microscopic picture of cancer, some form of chronic cystic mastitis predominates.

I have now submitted over a hundred such cases to many surgical pathologists and pathologists in America, and always find a difference of opinion as to malignancy or suspicion of malignancy. The precancerous lesion of the breast is yet to be discovered or recognized.

There must be a practical working rule. First, when palpation of the breast finds a definite tumour, mass, or lump, or if there is any doubt as to such a finding, operation is indicated. Secondly, when the tumour is explored all doubtful areas should be treated as cancer and the complete operation performed.

When the examiner learns to recognize the types of chronic cystic mastitis which produce lumpy and shotty breasts and the dilated ducts beneath the nipple, unnecessary operations will grow fewer. When the surgeon and pathologist learn to detect non-encapsulated areas of chronic cystic mastitis from cancer, the number of complete operations for benign conditions of the breast will also be reduced.

My conclusions are: (1) If cancer of the breast is to be cured by operation in 70 or more per cent., all women must be influenced to come for examination the moment a lump is felt. (2) When women do seek advice early, in at least 50 per cent. of cases careful examination will exclude any indication for operation. (3) When the definite early lump is explored, the chances are that in 50 per cent. it is not malignant and it will be necessary only to remove a zone of breast. (4) Removal of the breast, with few exceptions, is an illogical operation; it is too much for a benign and not sufficient for the malignant. (5) If the pathologist requires all the breast for microscopic examination there can be no conservative surgery of the breast. (6) A woman who presents the clinical picture of chronic cystic mastitis, or in whose breast at the exploratory operation gross and microscopic evidence of this lesion are found, runs no more risk of cancer than any other woman. Removal of the breast is not indicated for chronic cystic mastitis alone. (7) As suggested in your editorial (January 3rd, p. 32), an exploratory operation is always indicated, not only for a definite single lump, but for a doubtful one. At this exploratory operation the patient must be prepared for the complete operation, but the area should be cut into or excised, its gross appearance and the results of palpation considered, immediate frozen section made, and decision as to the extent of the operation made then and there. When there is doubt it is safer to perform the complete operation for cancer.

These conclusions are based on a continuous study for more than twenty-five years. Conservative methods have been forced upon us. In my own clinic 50 to 60 per cent. of the women who come for examination are not operated on, and in more than 50 per cent. of the early cases explored cancer is not found, and the breast is saved with no risk to the patient.—I am, etc.,

Baltimore, U.S.A. JOSEPH C. BLOODGOOD.

INTERNAL DERANGEMENTS OF THE KNEE.

SIR,—With regard to Mr. Wilson Stuart's article (JOURNAL, February 7th, p. 264), I would like to comment on each of the cases described.

Case I is obviously a case of *repeated* derangement of the knee-joint which will have to be operated upon eventually. The so-called "reduction" of the ruptured semilunar cartilage seldom leads to its "healing." The success of the manipulation seems to depend upon the torn portion of the cartilage being displaced towards the interior of the joint—probably in the neighbourhood of the crucial ligaments.

The history of Case II is one of repeated derangements, with locking at the time of consultation. In such a case I am accustomed to get the patient's consent to immediate exploration of the joint, should my manipulation be unsuccessful. This saves the patient much anxiety and a second anaesthetic, and the joint increased trauma.

In short, explore forthwith any knee-joint in which a second derangement has taken place.—I am, etc.,

London, W.1, Feb. 9th. B. WHITCHURCH HOWELL, F.R.C.S.

SEVERE DERMATITIS FOLLOWING ULTRA-VIOLET LIGHT.

SIR,—In your issue of April 11th (p. 693) Drs. MacCormac and Moreland McCrea describe a case of severe dermatitis following ultra-violet irradiation. There is, I think, a very definite physical reason for what has happened, to which I venture to call attention. The kind of apparatus used is not mentioned, but the facts stated point to the mercury vapour quartz lamp.

Ultra-violet radiation differs from ordinary visible light only in wave-length. Whereas visible light ranges from a wave-length of 7,000 Angström units (1 A.U. = 10^{-8} cm.) at the red end of the spectrum to 4,000 A.U. at the violet end, the ultra-violet comprises wave-lengths from 4,000 A.U. down to about 2,000 A.U. Sunlight has a spectrum ending at 3,000, and of this the range from 4,000 to 3,000 is ultra-violet. Professor Russ and others have shown that at the point 3,000 A.U. a marked change occurs in the effect of ultra-violet on living tissues and beings. Radiation of wave-length longer than 3,000 can penetrate to some slight depth. Radiation shorter than 3,000 is, however, very heavily absorbed even by the smallest thickness of skin and is bactericidal.

Sunlight contains little radiation of wave-length shorter than 3,000, and the human skin and body have, by the process of natural selection, become suited to this form of radiation. The mercury vapour quartz lamp has a spectrum in which there is considerable intensity in the region from 3,000 to 2,000 A.U., and its use therefore exposes the body to a radiation to which it is not accustomed under natural conditions.

Of all artificial sources that most similar to sunlight in its spectrum composition is the carbon arc lamp.

There can be little doubt that, where general irradiation is desired for that stimulation of the body the mechanism of which is still but slightly understood, the carbon arc lamp should be employed. The tungsten arc and the mercury vapour quartz lamp should be reserved for those cases which can be described as "surgical," in which definite destruction of localized areas is desired; and these two lamps must be used with great care—as the case quoted by Drs. MacCormac and Moreland McCrea shows.—I am, etc.,

London, W.1, April 15th. W. E. SCHALL, B.Sc.

INDIVIDUAL MEDICAL DEFENCE.

SIR,—Paragraphs 50-58 of the Annual Report of the Council of the British Medical Association to the Representative Meeting next July, on the subject of individual medical defence, require the most careful attention of all members. By "individual medical defence" the Council means the work now done by the Medical Defence Union and the London and Counties Medical Protection Society (and by a sister society in Scotland). When these societies came into existence many years ago, there was, I gather, no desire on the part of the British Medical Association to undertake "individual medical defence": a short-sighted attitude, to my mind, but ancient history now. For several years resolutions in favour of the Association changing its policy in this matter have been debated at the Representative Meetings, but have always been defeated; the last occasion was in 1924.

Now for the first time the Council is giving support to the principle, chiefly on the ground that individual defence is that aspect of professional organization which most appeals to the newly registered, and that the British Medical Association is handicapped in its efforts to enrol the entire profession by its inability to offer the kind of help which new entrants most require, or believe they require; there have been other arguments, of lesser validity, some of which you allowed me space to comment upon last year (BRITISH MEDICAL JOURNAL, June 14th, 1924, p. 1072). But the Council finds an insuperable obstacle in the Memorandum of Association, which (as it

tells us) will not allow the British Medical Association to take up individual defence. To circumvent this difficulty, as the Memorandum probably cannot be altered in this respect, it is suggested that a "separate organization" should be "initiated" to give such members as desire it and are willing to pay a separate subscription for it, full medical defence as given by the existing societies. The Council asks for authority to prepare a draft scheme and to circularize the profession to find out whether 6,500 will join in it. It states that the organization would have to be a separate company, on the governing body of which the Association could arrange for unofficial majority representation. It does not, however, state who is to pay the expenses of preparing and circulating the draft scheme and of floating the company: presumably the company, if, as may quite possibly be the case, it is *ultra vires* for the Association to do so.

That is, in outline, what members of the British Medical Association have to consider.

Although the British Medical Association cannot back the scheme financially, or associate itself officially with the company, the Council apparently hopes to control it unofficially. But once the company has been started, the subscribing members of it will have complete control, because at their annual meetings they will be able to elect their own officers and to modify the constitution of the company. The Council of the British Medical Association may benevolently draft the first Memorandum of Association and provide the first set of office-bearers, but cannot possibly, even unofficially, impose the faintest shadow of authority over the new company when once it is floated. The company, if a majority of the members wish, can go entirely counter to the policy of the Association; not a very likely supposition, doubtless, but not an impossible one. The British Medical Association, in other words, will not be able to approach new members of the profession saying, "Join us, and you can join an individual defence society which is part of us and under our control"; such a statement would be untrue. It follows that the argument as to strengthening the position of the British Medical Association in respect of the newly registered falls to the ground: the Association will be in no stronger position than before.

Further, no part of the Association's funds can be at the back of the new company, which must start without any reserve fund. The British Medical Association must disclose this fact in approaching the newly registered; nay, must even emphasize it, because few of the recently qualified are likely to think of investigating that matter for themselves. The Association must say, "Join us, and we will collect, if you wish, your subscription to an individual defence company which has been started under our auspices, but over which we exercise no control whatever and are in no way responsible for; and please note that this company has no reserve fund, whereas the older and larger societies have funds running into many thousands of pounds." A large reserve fund is not absolutely indispensable to the work of a defence society; both the existing societies started without any, as everyone knows. But reserves are so advantageous that the society which has them is by that fact alone able to offer better defence, better value for his subscription to the individual than the society which has not. Nor is this a fanciful objection, or a purely theoretical one. In a single *cause célèbre* of 1924, the London and Counties Medical Protection Society is rumoured to be seriously out of pocket, although victorious.

As to the management next. By years of trial and elimination the existing societies have obtained councils of managers highly experienced in the work of individual defence. It would be foolish to say that the councils of the Defence Union and the Protection Society are invariably right; but there is extraordinarily little dissatisfaction among their twenty odd thousand members, by whom directly and indirectly the entire councils are elected.

Dr. Morton Mackenzie told the Council of the British Medical Association that the existing societies have been given every opportunity of entering into co-operation, and have refused. The explanation should be added that what Dr. Mackenzie alludes to is a suggestion made at a joint conference that the defence societies should grant some special concessions to members of the British Medical Association—for example, waiving entrance fee, or reduced subscription. To call this "every opportunity of entering into co-operation" is not fair to Dr. Mackenzie's own organizing and administrative abilities.

The scheme can be summed up fairly simply. It is that a new "individual defence" society shall be formed, confined to members of the British Medical Association, if 6,500 are prepared to join as members. The new body is to do the same work as the existing societies, at the same rates of subscription. It is not to be part of the British Medical Association, nor is it bound to remain even unofficially under the control of the British Medical Association for more than its first year. It will not enable the British Medical Association to offer to the newly registered any advantages whatsoever that are not at present offered. It will start handicapped by lack of reserve funds, by lack of experienced management, by a membership smaller (that is, by overhead charges greater per member) than those of the existing societies. It means that three offices, three paid secretaries, three office staffs, three firms of solicitors, three auditors, three advertisement accounts are to be paid for out of the pockets of the medical profession to do necessary work now done, and well done, by two. Forty-five years ago the scheme would have been a benefit to the profession. To-day it seems to me wasteful and unnecessary. I am ready to vote for it and to join it if I am convinced that it is for the benefit of the profession; but at present I am not so convinced.—I am, etc.,

London, S.W., April 20th. HENRY ROBINSON, M.D.

CONFERENCE OF MENTAL HOSPITAL AUTHORITIES.

THE ASYLUM NURSING SERVICE.

A NATIONAL conference of mental hospital authorities (medical superintendents and representatives of visiting committees) was held on April 21st and 22nd, under the chairmanship of Sir FREDERICK WILLIS, chairman of the Board of Control. On the first day the nursing service in mental hospitals was discussed, and on the second day the provision of further mental hospital accommodation.

Mr. Neville Chamberlain, the Minister of Health, in opening the conference, expressed the hope that some practical result would emerge from the report of the departmental committee on mental nursing. The nursing service for the insane, he said, should be at least equal in efficiency and status to any other branch of nursing. A very great distance had been traversed from the old-time "keeper" to the modern asylum nurse, and the courses of training and examinations organized by the Medico-Psychological Association during the last thirty years had been a great factor in progress; more than 17,000 nursing certificates had been granted by the association. With regard to the second subject before the conference, the question of further accommodation was becoming increasingly urgent, not because the number of insane was growing at a greater rate than the population, but because the incidence was decreasing so slightly that with the growth of population the number of persons in need of such accommodation also increased. When he formerly held his present office he was responsible for the Mental Treatment Bill, which passed the House of Lords, but went no further owing to the general election of 1923. It was not possible to reintroduce the bill while the Royal Commission was sitting, but he thought there was general agreement as to the need for legislation to enable early treatment to be obtained without certification by persons in the incipient stages of the disorder, and he hoped it would be his good fortune before he relinquished office to add a measure of this kind to the Statute Book.

Sir Frederick Willis said that as the outcome of the conference of mental hospital authorities in 1922 three departmental committees were set up. One of these dealt with dietaries, and many of its recommendations had already been adopted. A second dealt with records, and this had framed new rules, which had been approved by the Lord Chancellor; the speaker regretted that it was not possible still further to simplify the keeping of records. The remaining committee, which was presided over by Dr. C. Hubert Bond, had to do with nursing, and its report was available for discussion that day. He announced his intention not to accept any resolutions.

A number of medical superintendents then addressed the conference on various aspects of the nursing question. Dr. H. D. MacPhail (Newcastle-on-Tyne Mental Hospital) spoke on grading and nomenclature; Dr. W. F. Menzies (Cheddleton) on training; Dr. M. A. Collins (Chartham) on remuneration; and Dr. G. Clarke (Bexley) and Dr. R. Eager (Exminster) on hours of duty. Dr. Clarke favoured a 48-hour week, or, more conveniently, a 96-hour fortnight, while Dr. Eager favoured a 56-hour week, but so arranged that each nurse had two consecutive whole days each week off duty.

A refreshingly original contribution was made to the debate by Dr. Henry Devine (Portsmouth), who spoke on the supply of suitable candidates. He said that in getting nurses asylum authorities were hypnotized by what he called the hospital fetish. Mental institutions were not meant to be established finally and entirely on the lines of hospitals, but on the lines of garden cities. A large proportion of cases in asylums were not sick at all, and a number of nurses in these institutions hardly saw a sick case. What was very desirable was that members of the staff should contribute any aptitude or skill, not necessarily belonging to nursing proper, which would help to create inside the asylum a world very similar to the world outside. An attendant who could organize cricket matches or a female nurse able to teach the two-step might often be of more use than one who regarded the duties of her or his vocation as being entirely along the lines of looking at the tongue and feeling the pulse. Apart from this, however, Dr. Devine pointed out that the care of the great number of patients who did require active nursing was a serious problem. It did not seem possible to get a sufficient number of nurses to take up their careers seriously to meet the needs of the acute mental case. Nurses drifted in for no particular reason, fetched and carried a little, and drifted out again also for no particular reason. The fundamental difficulty was that there was no career for the asylum nurse. For the hospital nurse a choice of careers presented itself in connexion with many public and other services. His own view was, paradoxically stated, that if the asylum nurse was to be helped she must be abolished altogether. Just as there was one portal for the medical profession, so there should be only one portal for the profession of nursing, whatever branch was ultimately chosen, and that portal should be the general hospital. All nurses should first obtain their basic training in hospitals or infirmaries, and then those who chose mental nursing could go on to complete their training at the asylum. This was done in other countries, notably in Denmark, where it was a great success. The divorce between general and mental nursing was absurd, and helped to perpetuate the regrettable division between psychiatry and general medicine. This reform of nursing would be easier to bring about when, as might happen before long, the infirmaries were taken over by the public authorities; in that case the infirmaries, the fever hospitals, the tuberculosis hospitals, and the mental hospitals would all be under one authority, and the separateness of mental nursing, which was looked upon in some quarters as scarcely nursing at all, would no longer obtain. Moreover, a time would come when mental nursing would not be confined to the mental hospital. With various mental clinics starting, wards for mental cases in general hospitals, and so forth, it was evident that the mental health of the community was going to be regarded as a far more important affair than it had been in the past.

A good deal of the discussion centred around the question of the nursing of male patients by women nurses. Miss Perry, matron of the Cardiff City Mental Hospital, said that this system, which was introduced during the war, had proved very successful at Cardiff. Of the nine male wards, six were in charge of female nurses; in four of these six wards one male nurse was also employed, the other two were wholly nursed by women. The three wards still in charge of male nurses were the ward of the chronic unruly, the epileptic ward, and the male reception ward. The presence of the female nursing staff promoted the hospital ideal, lessened the feeling of a place of detention, and brightened and refined the surroundings. The innate chivalry of men towards women could generally be trusted, even in a ward of male patients suffering from mental disorder. Colonel E. W. Goodall, the medical superintendent at Cardiff, said, in reply to a question, that it was somewhat more economical to work with women than with men, but this question did not really enter into consideration. Professor G. M. Robertson of Edinburgh warmly supported the proposal to have women nurses for male wards; he said that this obtained in every asylum in Scotland.

Speaking on a recommendation of the departmental committee, that the cost of maintenance of mental cases, at present defrayed by Poor Law authorities, should be a charge upon the county or county borough rate, and that a proportion of the cost should be borne by a Government grant distributed by the Board of Control, with power for the Board to withhold it in cases of inefficiency, Sir William Hodgson strongly protested against such a course. He said that the Board of Control at present had no executive power over their mental hospitals, and he thought some of them would never consent to such control being handed over. With regard to nurses, he was of opinion that the asylum nursing service compared very favourably with that of hospitals of all kinds in this country.

The second day's proceedings of the conference will be reported in the next issue.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

PART I (surgery, midwifery, and gynaecology) of the third examination for medical and surgical degrees (M.B., B.Chir.) will begin on Tuesday, June 16th, and Part II (principles and practice of physic, pathology, and pharmacology) on June 17th. Part I will end on June 20th and Part II on June 25th. The examination for the degree of M.Chir. will be held from June 16th to 20th. Names of candidates for these examinations should be sent to the Registrary by April 28th.

The following candidates have been approved at the examination indicated:

DIPLOMAS IN PUBLIC HEALTH, HYGIENE, AND TROPICAL MEDICINE AND HYGIENE (*New Regulations*).—*Part I*: M. Abd El M. El Diwany, A. N. Fergus, A. R. Hassan, Mary K. Henegan, C. F. Pedley, C. H. H. Robertson, L. Shehata, *C. J. Stocker, W. J. Vickers, A. D. Whitelaw, M. K. Yue.

* Distinguished.

UNIVERSITY OF BIRMINGHAM.

Lectures.

THE Ingleby Lectures will be delivered in the Medical Lecture Theatre by Dr. J. G. Emanuel on May 6th and 13th at 4 p.m., the subject being auricular fibrillation.

A course of ten lectures on the biological aspects of normal and morbid psychology will be delivered by Sir Frederick Mott, M.D., F.R.S., in the medical school buildings of the University on Thursdays at 4 p.m., commencing on April 30th. Cards of admission can be obtained on application to the Dean of the Faculty of Medicine.

UNIVERSITY OF GLASGOW.

AT a graduation ceremony held in the Bute Hall on April 21st medals and prizes were presented and degrees conferred as follows:

The Captain H. S. Ranken, V.C., memorial prize of £5, awarded to the student who obtained the highest marks in the subject of pathology in the professional examinations held in 1924: Janet S. F. Niven, Herbert W. Pinkerton, and James Wemyss, equal.

Bellahouston gold medal for eminent merit in theses for M.D.: George A. Allan, David Campbell, Robert D. Gillespie.

Asher Asher gold medal for laryngology and rhinology: Alexander B. Smith.

B.Sc. (in Public Health): William Fraser, John Walker.

CONJOINT BOARD IN SCOTLAND.

THE following candidates have been approved at the examination indicated:

FINAL EXAMINATION.—*Medicine:* Constance C. Reid, Ella D. Messenger, J. J. McKenna, Constance P. H. Hunter, B. C. F. Leembruggen, P. R. S. Rao, E. K. Lee, P. C. Sen, T. W. Chapman, J. R. Hetherington, B. A. Meyer. *Surgery:* Irma E. L. Mackenzie, Constance C. Reid, F. Blacklee, Ella D. Messenger, B. E. Khoo, W. A. F. Hurst, M. R. Soni, A. S. Ballantine, W. T. Baker. *Midwifery:* B. G. V. Dias, L. H. Wilson, F. Blacklee, Ella D. Messenger, G. R. Mitchell, J. J. McKenna, Constance P. H. Hunter, W. A. N. Chanmugam, B. C. F. Leembruggen, A. W. Rosiah, U. van Rooyen, P. R. S. Rao, J. C. Stenhouse, Mary A. McGill, E. K. Lee, P. C. Sen, T. W. Chapman, J. T. Fernandez, B. A. Meyer, M. Camrass, A. Franklin, A. S. Hunt. *Medical Jurisprudence:* J. Sharpe, R. W. Schuch, J. Cook, L. H. Wilson, C. A. Munro, S. C. Chee, E. H. Eastcott, J. L. L. D'Silveira, M. Yonakim, E. Fischbacher, C. E. Toh, J. D. Cooper, D. D. Radford, T. Lipschitz, Mary D. Clark, J. B. Panton, N. J. Knoesen, G. R. Mitchell.

Of 125 candidates entered the following 39 passed the final examination and have been admitted L.R.C.P.Ed., L.R.C.S.Ed. L.R.F.P.and S.Glasg.:

H. Goldsmith, J. A. Hyde, L. K. Htoe, J. Kirkness, S. W. Tay, J. Harkness, F. D. Muller, H. B. Wainer, R. T. Johnson, Winifred G. Price, M. M. El-Makkawi, A. B. Jayasuriya, A. H. T. de Silva, J. L. Malone, A. Wilson, M. E. T. Burke, H. A. Dirckze, S. Ghaleb, A. Chellappa, W. A. Kemp, S. Ramakrishnan, M. Kopelowitz, A. F. Senewiratne, J. F. Hedley, W. J. Ledgerwood, R. H. Mackintosh, J. Houston, D. B. Craig, S. K. Sie, M. L. Hendrie, J. M. Coutts, I. Joels, H. D. J. Lazarus, M. Gordon, O. L. F. Senaratne, P. King, W. M. F. Ker, M. J. Quraishi, A. A. F. Shepherd.

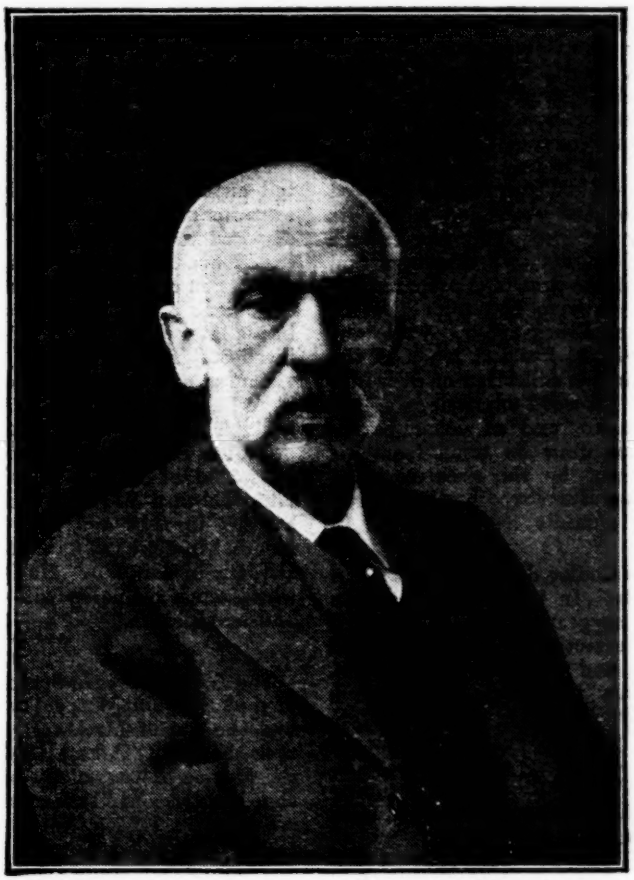
Obituary.

SIR RICKMAN JOHN GODLEE, BT., K.C.V.O., M.S.,

Consulting Surgeon to University College Hospital;
Formerly President of the Royal College of Surgeons of England.

WE regret to have to record the death, on April 20th, after a few hours' illness, of Sir Rickman Godlee, at his house at Whitchurch, near Pangbourne, where he had gone to live after retiring from practice in 1920.

Rickman John Godlee was the son of Rickman Godlee, barrister, who married Mary, the daughter of Joseph Jackson Lister; Godlee was therefore the nephew of Lord Lister, who exercised a great influence on his character and career. The Godlees, like the Listers, were Quakers, and this was a second great influence on Godlee's character. A third influence arose out of his skill as a dissector and his remarkable ability as a draughtsman, which caused his services as an illustrator to be eagerly sought while he was still quite a young man. This is, however, to put the fact rather low, for Godlee himself was an artist of some ability and a fine judge of etchings and mezzotints.



Photograph by] [*J. Russell and Sons, London.*

SIR RICKMAN JOHN GODLEE, BT.

Rickman Godlee was born on February 15th, 1849, at Upton, Essex, where also Lister's father lived and there was a considerable colony of Quakers, the Listers being among the chief members of it. He was educated first at a school in Tottenham, and then at University College, London. He took the degree of B.A.Lond. in 1867, and then entered University College Hospital Medical School. His chief friends there were Marcus Beck, Vivian Poore, and John Tweedy. These three were early appointed to the staff of the hospital. Godlee, who, after holding the usual resident appointments, had become surgical registrar, was passed over, to the surprise of his contemporaries and to the chagrin of the students. He became assistant surgeon to Charing Cross Hospital. Within a few years, however, an opportunity occurred of repairing the mistake, and Godlee became assistant surgeon to University College Hospital, in due course surgeon, and eventually consulting surgeon. He was also professor of clinical surgery in University College, and when he retired was made emeritus professor.

The position of the medical school of University College Hospital was at the time of Godlee's appointment to the staff rather unusual; the number of students was large and the standard among them high. The staff, at least the younger members of it, were not exactly popular with staffs of other schools; they were accused of looking out for novelties and talking too much about physiology, pathology, and bacteriology, thereby disturbing the comfortable old ways. Marcus Beck, assistant surgeon, was the leading spirit. He was a cousin of Lord Lister, had lived with him while studying at Glasgow, and was one of his most faithful disciples. Beck was the first surgeon in London to carry out the antiseptic system of surgery with understanding; he had a powerful ally in the late Mr. (afterwards Sir Henry) Howse of Guy's Hospital, and a welcome recruit in Godlee. Their efforts, persistent and enthusiastic as they were, only slowly produced an effect upon the ordinary practice of the London hospitals; gradually they were winning over the younger men when Lister was appointed professor of clinical surgery at King's College in 1877. Thereafter, with the master on the spot, progress was a little less slow, but even then not rapid. The eventual triumph is a commonplace of surgical history and may be read more at length in Godlee's *Life* of Lister. As Godlee said in the preface to his first edition, "During my studentship I was able to compare the old system of surgery, then in full swing at University College Hospital, with Lister's practice in Edinburgh. Few are left who had so good an opportunty of making this comparison, or of watching the whole course of the modern revolution in surgery, or of noting the heresies and schisms as they crept in."

Godlee graduated M.B., B.S.Lond. in 1872, and M.S. in 1873. His long connexion with the Royal College of Surgeons of England began in 1872, when he took the diploma of M.R.C.S. He became F.R.C.S. in 1876 and was elected a member of council in 1897, at the same time as Sir Watson Cheyne and the late Mr. Edmund Owen. In 1911 he succeeded Sir Henry Butlin (who died in office) as president, and served for the two following years (1912, 1913). In his last year as president he delivered the Hunterian Oration entitled "Hunter and Lister"; it was mainly concerned with the history of the museum of the Royal College of Surgeons of England and with the orator's aspirations for its future. As Godlee said in that lecture, he had had the privilege of passing the best years of his life in the closest intimacy with Lister; and both on that account and because of his command of a good English style he was marked out to be the biographer of his uncle. The book was very well done and was an immediate success. It not only gave an authoritative and well documented account of Lister's work as a surgeon and man of science, but it contained also a picture of the simple, homely, but full life of the Society of Friends, a picture which will remain a permanent contribution to the social history of English society. The first edition appeared at the end of 1917, and a second edition was called for within a few months. A third edition appeared, with some additions, at the end of last year; it was reviewed in our issue of December 27th (p. 1205).

Sir Rickman Godlee rendered many services to the Royal College of Surgeons of England besides those done when he was its president. On completing his *Lord Lister* he, as acting executor, presented to the College all his uncle's scientific and surgical possessions. In this way the College became the owner of Lister's surgical instruments and appliances, the apparatus used in his more important experiments, as well as all his original manuscripts and records of his investigations. It was a fortunate circumstance that the description and cataloguing of this collection—the outfit of the greatest surgeon of modern times—should have been entrusted to that rare and ripe

scholar, Mr. Alban Doran. In writing the description of the Lister collection Mr. Doran had the advantage of Sir Rickman's counsel and knowledge. Many were the conferences they had, all of which usually ended by the participators comparing how time was dealing with their respective healths, for they were born within a day or two of each other. Mr. Doran never wearied in pointing out that the three young medical men of his time who had given their attention to pathology in their younger days had all become baronets. These young men were Sir James Goodhart, Sir Henry Butlin, and Sir Rickman J. Godlee. As a matter of fact, in his younger days Godlee was both anatomist and pathologist, but of the two he would have preferred to be regarded as anatomist. Anatomy at that time was a recognized path to a surgical career. On taking his Fellowship in 1876 he began the preparation of an *Atlas of Human Anatomy*. On the title-page he informs the reader that it "illustrates most of the ordinary dissections and many not usually practised by the student." The *Atlas* was accompanied by an explanatory text. Over 100 dissections were made for its preparation, mostly by himself, during the years from 1876 to 1880—the years during which he waited for patients. Each dissection was drawn by himself in pencil, vessels and nerves being given distinctive colours. His drawings were reproduced on stone. The *Atlas* was brought out by Messrs. Churchill in 1880, and never received the recognition at the hands of the profession which its merits should have secured for it. On giving the College the Lister collection Godlee added his own drawings and records to the gift. He included the drawings prepared for his *Atlas*, and they show him to have had high gifts as draughtsman and artist. The lithographer, while he retained the clarity of the originals, has lost much of the softness of Godlee's artistry. In this collection of drawings are included delicate and beautiful wood engravings of the microscopical structure of tumours and of other pathological conditions. These Godlee drew on wood from his own preparations. They were cut by the greatest wood engraver of the time—the elder Butterworth. The wood engravings were published in Quain's *Anatomy* and in Erichsen's *Surgery*.

There can be no doubt whence Godlee drew his gifts as an artist—from his mother's family. In the Lister collection are drawings done by the great surgeon in 1862-64 when he was planning his operation for resection of the carpus and wrist-joint. Some are in black and white, some in water-colour, some in oils, but all show that Lister would have made a name as an artist and draughtsman. Godlee's style resembles that of his uncle; perhaps he had the more delicate and accurate pencil. Godlee was not only an artist, but he loved the highest forms of art. He was the possessor of a valuable collection of etchings, many of which were fine examples of Rembrandt's best.

Amongst the drawings which Sir Rickman Godlee presented to the College are some of historical importance. On May 20th, 1874, he opened an abscess connected with an acute necrosis of the tibia and immediately mounted some of the pus and examined it under the microscope. He made accurate drawings, by aid of a camera lucida, of certain curious minute bodies detected by him in the pus. They were arranged in rows or chains. This drawing he presented to the College with others. On it he has written, "This was, so far as I know, the first time that organisms were seen in the pus of an abscess immediately it was opened." Another drawing, made February 1st, 1875, represents the same organism arranged in chains. The drawings are done in Godlee's most finished style. Having made his drawings, he did nothing more; he did not name or describe the characters of the organism he had observed. They were streptococci. The classical paper by Sir Alexander Ogston, in which streptococci and staphylococci were described and named for the first time, appeared in 1881. Nevertheless, Godlee had seen and drawn streptococci in the pus of a newly opened abscess in 1874, when he was 25 years of age.

When in the early stage of the great war Belgium was overrun by the German armies many members of the medical and pharmaceutical professions were reduced to great straits, and some of them sought refuge in this country; an appeal was made to the doctors and pharmacists in this country to come to their aid. At the first meeting of a committee formed for the purpose Sir Rickman Godlee was in the chair, and he retained that position during the war and until, happily, the need for the continuance of the fund ceased. He gave a great deal of time to the work of organizing the collecting and distribution of the money. His services were recognized by the grant of the Médaille du Roi Albert in September, 1919.

Godlee was long a member of the British Medical Association. He was secretary of the Section of Surgery at the Annual Meeting in Dublin in 1877, and vice-president at that in Newcastle in 1893. He did not take any very active part in the public affairs of the profession, except when president of the Royal College of Surgeons; nor did he write much, but what he wrote was of a very high order of merit. His best known book was prepared in association with Sir James Fowler, and was entitled *Diseases of the Lungs* (1898). It was largely the result of experience gained at the Hospital for Consumption, Brompton. It was a very solid contribution to the subject and had a very great effect on the surgery of the thorax at the time. Early in 1890 he contributed to our columns a course of three lectures delivered at the Brompton Hospital on the surgical aspects of hepatic abscess. They commenced with the sentence, very characteristic in its dry humour, "It is needless to tell anyone connected with this institution that the chest contains many more organs than the student of anatomy is disposed to put into it." The conclusions with which he ended his third lecture still, we believe, stand as a sound expression of the main principles of hepatic surgery.

Godlee's growing cataract may have impaired his eyesight in his later years; it certainly did not dim the vision of his intellect. He kept throughout his life the freshness of vision so often confined to youth. When he retired to his farm he opened up new interests—botanical, zoological, and geological. And he never tired in well-doing.

Godlee received many honours; he was surgeon to the household of Queen Victoria, and surgeon-in-ordinary to King Edward VII and King George V. He was created a baronet in 1912 and received the K.C.V.O. in 1914. He married in 1891 the daughter of Frederick Seebohm, LL.D., D.Litt., of Hitchin. He is survived by Lady Godlee, with whom much sympathy will be felt in her bereavement. They had no children.

The Very Rev. LANCELOT PARKER BOOTH, M.D., D.D., died at Seapoint, Cape Town, on March 28th, aged 74. He was the son of Mr. L. P. Booth of Bishop Auckland, and took the L.R.C.P. and S.Ed. in 1876, after which he entered the service of the colony of Natal, in the Indian Immigration Department. Determining to enter the Church, he was ordained in 1883 by the Bishop of Maritzburg as assistant to the bishop for Indian missions, subsequently becoming diocesan superintendent of Indian missions and Canon of Maritzburg. In 1887 he obtained the degrees of M.D. and C.M. from Toronto University, which later on, in 1902, conferred upon him its degree of D.D. also, and in 1896 he graduated as M.D. of Durham. In 1900 he was appointed dean of St. John's, Kaffraria, and rector of Umtata, and at the same time resumed the medical profession, to serve in the South African war as medical officer of the Natal Indian ambulance, and received the Queen's medal with two clasps. In 1912 he removed to Cape Town, where he was for a short time vicar and subdean of St. George's Cathedral, and in 1913 was appointed rector of St. Barnabas, Cape Town. During the recent great war he served in France as a temporary captain in the R.A.M.C., his commission as such being dated November 14th, 1916, doing duty with the South African native labour corps. His only son, Lieutenant Ainslie Booth, R.A.M.C.(T.C.), was killed in action in France on April 30th, 1916.

Dr. VICTOR JACQUES, a well known Belgian anthropologist and honorary professor in the Brussels Faculty of Medicine, has died at the age of 71.

The death is announced of Dr. MORIN, president of the Swiss Antituberculosis Association.

The Services.

THE NAVAL MEDICAL COMPASSIONATE FUND.

AT the quarterly meeting of the directors of the Naval Medical Compassionate Fund, held on April 17th, when Surgeon Vice-Admiral Joseph Chambers, C.B., C.M.G., Medical Director-General of the Navy, was in the chair, the sum of £125 was distributed among the several applicants.

INDIAN MEDICAL SERVICE.

THE annual dinner of the Indian Medical Service in London will be held at the Trocadero Restaurant on Wednesday, June 17th, at 7.15 p.m.

Medical News.

THE Malaria Commission of the League of Nations Health Organization, which consists of representatives of Great Britain (Colonel S. P. James, of the Ministry of Health), France, Germany, Italy, Poland, Rumania, and Holland, has arranged a scheme of inquiry into the malarial conditions, first in Egypt, Palestine, and Syria, and then in Turkey, Asia Minor, Sicily, Corsica, and Spain. It is to begin in May and to be continued until the end of September. The Commission has in hand a report on malaria in Albania, and is considering the appointment of additional corresponding members from British India, the United States, and France. It is also considering from the economic point of view the use of cinchona alkaloids as well as of quinine.

DURING the annual meeting of the Canadian Medical Association at Regina, from June 22nd to 26th, an address will be given by Mr. H. W. Carson, F.R.C.S., president of the Hunterian Society of London. Mr. Carson has been specially invited, through the British Medical Association, as the guest of the Canadian Medical Association.

DR. DOUGLAS E. FINLAY, the Representative of the Gloucestershire Branch in the Representative Body of the British Medical Association, has been elected a member of the Gloucester City Council without a contest.

DR. E. F. BINDLOSS of Farnborough secured first place on the poll in the recent election of district councillors, and his wife headed the poll in the election to the local board of guardians.

THE next social evening at the Royal Society of Medicine will be held on Monday, May 4th, at 8.30, when Fellows and guests will be received by the President, Sir StClair Thomson. At 9.30 Dr. Robert Hutchison will give a short address on "Dr. Samuel Johnson and Medicine" (illustrated with eighteenth century portraits).

DR. ANDREW BALFOUR, director of the London School of Hygiene and Tropical Medicine, will read a paper on the trend of modern hygiene before the Royal Society of Arts (John Street, Adelphi, W.C.2) on Wednesday, April 29th, at 8 p.m. The chair will be taken by Sir George Newman, Chief Medical Officer, Ministry of Health.

THE annual meeting of the Ontario Health Officers' Association will be held on May 4th, 5th, and 6th in the Mining Building of the University of Toronto, under the presidency of Dr. C. N. Laurie of Port Arthur. The proceedings will open with an address by Dr. J. W. S. McCullough, chief medical officer of health for the province.

THE Fellowship of Medicine announces that on May 11th a three weeks' course in diseases of the nose, throat, and ear, including an operative surgery class, commences at the Central London Throat, Nose, and Ear Hospital. At the Maudsley Hospital a month's course in psychological medicine will be held from May 4th to 28th. A two weeks' course in diseases of infants at the Infants Hospital from May 18th to 30th includes clinical demonstrations, "round table" consultations, lectures, and four visits to centres away from the hospital. An afternoon course in dermatology will take place at the Hospital for Diseases of the Skin (Blackfriars) from May 18th to 30th. For those in general practice it is proposed to hold a two weeks' course at the London Temperance Hospital from May 18th to 29th, Saturday excepted. At 4.30 p.m. each day a clinical demonstration (with cases) will be given, followed by a short lecture at 5.30. Further details of these courses may be obtained from the secretary of the Fellowship, No. 1, Wimpole Street, W.1.

A COURSE of lectures on pathological research in its relation to medicine will be given in the lecture room of the bacteriological department of the Institute of Pathology and Research, St. Mary's Hospital, Paddington, W.2, on Thursdays at 5 p.m., commencing on April 30th, when Sir Almroth E. Wright, M.D., F.R.S., Principal of the Institute, will speak on chemotherapeutic agents. On May 7th Professor W. E. Dixon, M.D., F.R.S. (Cambridge), will discuss the cerebro-spinal fluid, with special reference to pituitary secretion. The last lecture, on June 18th, will be given by Mr. R. Robison, D.Sc., on the chemistry of the calcification of bone. The lectures are open free to members of the profession and to students in medical schools.

A SERIES of six clinical demonstrations on types of mental disease will be given at the Maudsley Hospital, Denmark Hill, S.E.5, by the medical superintendent, Dr. E. Mapother, on Wednesdays at 2.30 p.m., commencing on May 6th, when he will deal with congenital and early types. On May 13th psychoses associated with epilepsy and with syphilis will be discussed. The last demonstration is fixed for June 10th, when states of exaltation and depression will be dealt with. The fee for the six demonstrations, which will be illustrated by numerous cases, will be one guinea.

AT the annual medical mission meeting of the Society for the Propagation of the Gospel in Foreign Parts, on April 22nd, under the chairmanship of the Bishop of Singapore, the Rev. F. S. Drewe, M.R.C.S., L.R.C.P., of Holy Cross Hospital, Pondoland, Cape Province, gave an address illustrated by lantern slides, and Dr. H. H. Weir, secretary of the medical missions department, also spoke. The report of the medical missions department shows that the general medical fund for 1924 amounted to £14,538, an increase over any previous year. Very few male practitioners, it is said, are volunteering for service as medical missionaries.

DR. J. WRIGHT MASON, who, as recorded in our issue of April 18th (p. 763), was recently presented with a silver salver by the head officials of the Corporation of Hull, has been entertained to a complimentary dinner by members of the medical profession in Hull. Dr. Mason has lately retired from the post of medical officer of health for Hull after forty-four years' service.

THE conference held at Hoddesdon in September, 1924, on special libraries and information bureaux has resulted in financial support being obtained from the Carnegie United Kingdom Trustees for a period of two years in order to give the new movement an opportunity of becoming self-supporting. Mr. G. W. Keeling has been appointed organizing secretary to the committee. A second week-end conference will be held at the end of September and a directory of special libraries and information bureaux for the United Kingdom is in contemplation.

THE thirty-eighth congress of the French Society of Ophthalmology will be held at Brussels on May 11th, when the following papers will be read: "Belgium, the classical land of ophthalmology," by Professor De Lapersonne; "The etiology of trachoma," by Dr. Morax; and "Was the artificial eye known to the ancients?" by Professor M. van Duyse of Ghent. An exhibition of optical instruments and pharmaceutical products will be held at the same time as the congress.

THE well known Belgian surgeon, Professor A. Depage, has been nominated Grand Officer of the Legion of Honour.

MESSRS. CONSTABLE AND CO., LTD., have published the agreement, protocol, and final act of the first opium conference (9d. net) and the convention, protocol, and final act of the second opium conference (2s. 6d. net). The first document was signed at Geneva on February 11th and the second on February 19th. The effect of the decisions of the conferences was discussed in a leading article on the international control of drugs of addiction published in the BRITISH MEDICAL JOURNAL of March 28th (p. 618).

THE nineteenth Voyage d'études médicales to the health resorts of France (organized solely for the medical profession) will take place during the first part of September under the scientific direction of Professors Carnot and Rathéry, and will be devoted to the resorts of the North and East. The party will assemble at Berck-sur-Mer and will first visit Paris-Plage, Lille, and Saint-Amand, and will then go to Belgium to visit Brussels, Spa, Luxemburg, and Mondorf. Returning to France via Niederbronn and Morsbronn, the party will visit Strasbourg, Schirmeck, le Hohwald, Sainte-Odile, Chatenois, and Ribeauvillé, Colmar, Soulzmatt, Soulzbach, Munster, les Trois Epis, le Linge, le Col de la Schlucht, and Gérardmer. Crossing the Vosges again it will then follow the road of the Cretes and visit Bussang, Luxeuil, Plombières, Bains-les-Bains, Bourbonne, Martigny, Contrexéville, and Vittel. First-class accommodation is arranged throughout the journey and at the hotels. For further particulars apply to Madame Juppé-Blaise, delegate of the French Spas, Office Français du Tourisme, 56, Haymarket, S.W.1.

THE Société française d'orthopédie dento-faciale will hold a congress at Brussels from May 21st to 23rd, when the following papers, among others, will be read: "Historical review of the different methods of transverse maxillary expansion," by M. Izard; "Physiotherapy of maxillo-dental malformations," by M. Watry; and "Terminology of orthodontia," by M. Izard.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.* Authors desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Financial Secretary and Business Manager, 429, Strand, W.C.2, on receipt of proof.

ALL communications with reference to advertisements as well as orders for copies of the JOURNAL should be addressed to the Financial Secretary and Business Manager, 429, Strand, London, W.C.2. Attention to this request will avoid delay. Communications with reference to editorial business should be addressed to the Editor, BRITISH MEDICAL JOURNAL, 429, Strand, W.C.2.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—not necessarily for publication.

Communications intended for the current issue should be posted so as to arrive by the first post on Monday or at latest be received not later than Tuesday morning.

THE telephone number of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is Gerrard 2630 (Internal Exchange). The telegraphic addresses are:

EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London.*

MEDICAL SECRETARY, *Mediscera Westrand, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

QUERIES AND ANSWERS.

INCOME TAX.

Succession: Partnership Introduction.

A. C. D." took over a practice as from January 1st, 1924, after a "partnership introduction" of three months from October 1st, 1923, on a basis of half-share of profits and expenses. Book debts were not taken over.

*** For the financial year ended April 5th, 1924, the average profits for assessment are presumably those of the three years to December 31st, 1923, and no difficulty will arise in respect of the book debts, as those profits can conveniently be made to include all debts received up to that date. If the assessment—that is, average profits less average expenses of both partners while working the practice as proprietors of the whole or part—be £*x*, "A. C. D.'s" share will be (1/2 of 1/4 *plus* 1/4 =) 3/8, and he will be liable to account for tax on that proportion, less any personal allowances to which he may be entitled. For the financial year ended April 5th, 1925, he will be liable on the average gross earnings over the three previous years, less the expenses incurred in working the practice *in those years*. His predecessor can no doubt supply the appropriate figures for 1922 and 1923, and for 1924 he should take the *value* of his bookings for his gross receipts and compute the amount of his expenses on the usual lines, excluding the expenses of acquiring the practice. If he can subsequently—that is, by April 5th, 1926—show that the assessment so calculated exceeds his earnings for 1925 (on the basis of the value of his bookings less expenses for that year), and that the reduction is due to some specific cause since or by reason of his succession to the practice, he can claim an adjustment of his assessment by repayment of tax or by any other convenient method.

LETTERS, NOTES, ETC.

A NEW MOSQUITO BREEDING PLACE.

UNDER this heading in our issue of March 7th (p. 488) we drew attention to an observation recorded by Dr. W. E. Haworth in the *Transactions of the Royal Society of Tropical Medicine and Hygiene* to the effect that mosquitos breed in the crowns of coco-nut palms. In our issue of March 21st (p. 586) was published a note from Dr. J. C. Ryan to the effect that in a book, *Health Preservation in West Africa*, published by him in 1914, reference was made to this source of danger. We have since received a letter from Dr. Haworth enclosing the following quotation from Dr. Ryan's book:

> "A universal custom amongst West African natives in felling trees, irrespective of the size, is to leave the stumps standing 2 ft. or 3 ft. high. These are frequently hollow in the centre; the stumps of palm trees are always so. During rain these cavities become filled with water, in which mosquitos readily lay eggs. Soon they become alive with larvae; so numerous, indeed, that ants stationed on the edge of the holes can easily prey on them, and have been seen doing so by the writer."

Dr. Haworth observes that Dr. Ryan's reference is to breeding in the hollows formed in the stumps of palms which have been cut down; his (Dr. Haworth's) was, as has been said, to the breeding of mosquitos in the crown of leaves of living palms. Dr. Haworth tells us that he can find no reference in Dr. Ryan's book to this. Dr. Haworth offers to send Dr. Ryan a copy of his paper on mosquitos and coco-nut palms.

EASY WRITING AND HARD READING.

IN a note published last week (p. 753) the phrase "Easy writing's d——d hard reading" was attributed to Byron. Dr. C. O. HAWTHORNE writes to recall Sheridan's lines:

> "You write with ease to show your breeding,
> But easy writing's curst hard reading."
>
> (Clio's Protest: Moore's *Life of Sheridan*, vol. i, p. 153.)

Sir STCLAIR THOMSON has sent a note on the same subject. He writes: In the JOURNAL of April 18th it is remarked, in an annotation anent the revision of manuscripts, that Anatole France "would have agreed with Byron's epigram had he known it—'Easy writing's d——d hard reading.'" Is this quotation from Byron authentic? If so, I presume it means hard "proof reading," for Byron was no hard reader, nor does the writing of poetry necessarily entail reading, d——d or otherwise. I have always heard the *bon mot* in association with public speaking and Sheridan, who, when complimented on his facile speech, replied, with his pleasant Irish accent, "Easy speaking, me boy, means d——d hard thinking." If not *vera* I think the story is much more *ben trovato* in this association than in connexion with poetry writing and hard reading.

*** It may be that, quoting from memory, we attributed to Byron an epigram that belonged to Sheridan, although we are under the impression that Byron used the phrase. However this may be, we suggest that Sir StClair Thomson has not taken the point, which is that easy writing for the author makes hard reading for the reader.

TRANSFUSION IN CARBON MONOXIDE AND COAL GAS POISONING.

DR. JAMES HOLMES (Bury) writes: The recent tragic death of a medical friend (who had been exposed to motor car fumes), after unavailing efforts at resuscitation by several medical colleagues for nearly twelve hours, has caused much regret and worry to me, especially as we are at present almost, if not quite, helpless in these cases. I therefore venture to suggest a possible method of treatment which has not, as far as I know, been tried. Though the method may be somewhat heroic, it is founded on well known facts. As those who have studied these cases know the gas combines with the red blood corpuscles and prevents them carrying oxygen to the tissues, and we know no method of separating it from them. The result is that attempts at artificial respiration, with or without oxygen, are doomed to failure. In these circumstances I venture to suggest that free transfusion, with, in suitable cases, venesection, might prove a successful treatment. The transfusion provides fresh corpuscles, free from the gas, able to carry oxygen, while venesection would, in plethoric cases, not only prevent the risks of high blood pressure, but also get rid of useless corpuscles.

LEMON CHEESE.

MR. G. D. ELSDON, B.Sc., F.I.C., has recently reported to the Society of Public Analysts the result of an investigation of "lemon cheese." He has come to the conclusion that it should consist substantially of butter, eggs, sugar, and lemons. An examination of commercial recipes and samples showed that the article manufactured on the large scale is frequently of inferior quality, and that preparations are on the market containing no eggs, no butter, and little fat of any description, and having from 30 to 50 per cent. of added water, the presence of which is masked by the addition of "British gum" and possibly gum tragacanth. He suggests that this and similar preparations should be amenable to control, and that it is undesirable that articles of varying composition should be presented to the public under the same description.

ASTHMA.

DR. R. D. MILLER (Hull) writes: In view of recent discussion on the cure of asthma the following case may be of a certain amount of interest. I have lately been attending Mrs. W., aged 62, for asthma and bronchitis of a peculiarly stubborn kind and of about twenty years' duration. Her nose and naso-pharynx have been examined on more than one occasion. Two months ago she developed an exceedingly severe attack of measles with a temperature of 104°, her whole body becoming one continuous mass of bright scarlet. Apart from any other consideration, I was extremely anxious about her chest, expecting her to develop some form of pulmonary complication severer than is common after a juvenile attack of measles. To my surprise her chest began to clear up, and before the rash had faded her asthma had entirely left her, and her lungs soon healthy. That her rash was due to measles there is no doubt, it having been seen by my chief independently from me. She had also had measles in childhood. I have seen her on several occasions lately and she is able to go about during inclement weather with no inconvenience at all.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges and of vacant resident and other appointments at hospitals will be found at pages 39, 40, 41, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 187.